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# N.C. community college/industry interactions: Present status and future possibilities

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# N.C. COMMUNITY COLLEGE/INDUSTRY INTERACTIONS: PRESENT STATUS AND FUTURE POSSIBILITIES

By

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The purpose of this study was to extend the current literature on college/industry relationships by examining the present status of college/industry relationships in North Carolina community colleges and offering a conceptual framework for managing those interactions. In developing the framework, several areas were studied: the literature on American College/Industry programs; the types, extensiveness, and effectiveness of college/industry relationships in the N.C.C.C.S.; and the linkage between community colleges' services and economic development. Data for the current status of college/industry relationship were supplied by surveys sent to the academic deans in the fifty-eight institutions and by interviews with six community college administrators with primary responsibility for managing college/industry relationships.

The conceptual framework for managing college/industry programs includes both strategic and operational planning components. Both components are based on a sequence of planning, selecting, organizing and delivering, and evaluating services.

Other essential elements of successful college/industry interactions include (1) administrative support, (2) an organized approach, (3) assignment of responsibility to a full-time person who exhibits good leadership qualities, (4) a formal protocol for

managing training activities, (5) formal contracts, and (6) an evaluation plan.

The major conclusions of the study are the following:

(1) The role of college/industry programs in state economic development needs to be examined and defined, and methods of measuring and reporting the relationship should be developed.
(2) Opportunities should be provided for community college administrators to learn industrial protocol and value systems.
(3) Economic incentives should be provided for new industries to locate near and cooperate with community colleges to provide training for the workforce.
(4) Community college/industry instructors should demonstrate knowledge of adult learning theories and learning styles.
(5) F.I.T. Centers or Business/Industry Coalitions should be established on each of the community college campuses.
(6) The state funding formulas for supporting industry training programs should be examined and adjusted to provide more incentives to expand industry services.
(7) Curriculum approval processes should be modified, allowing more local flexibility in selecting and offering training programs which interface with credit courses.
(8) A state marketing program should be developed.
(9) An evaluation plan for assessing industry programs should be developed and utilized.

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# CHAPTER 1

# INTRODUCTION

## Background

In its short history (last year marked the system's twenty-fifth anniversary), the North Carolina Community College System has emerged as the nation's third largest community college network. With its inauspicious beginning as independent state-funded industrial education centers scattered across the state, few people would have predicted the survival, much less the success of the system as it is today.

On May 16, 1963, the North Carolina General Assembly passed legislation which merged the junior colleges and the community based industrial training centers into one comprehensive statewide system of community colleges. The system now enrolls more than 650,000 students each year in 240 technical-vocational curricula, operates more than 1,600 separate programs, and employs 7,500 full-time and 12,000 part-time instructors (Department of Community Colleges 1988).

Several social forces contributed to the rise of the system. The most prominent were the need for workers trained to operate the nation's expanding industries and "the drive for social equality, which was enhanced by opening more schools and encouraging everyone to attend" (Cohen 1).

Despite the rapid growth of the system, the founding purpose of offering community-based education and specific jobs training at a reasonable cost is still at the heart of every North Carolina Community College's mission.

The North Carolina Community Colleges System fulfills its mission by providing:

> -vocational programs and courses for students desiring to prepare for skilled trades or to upgrade their job skills;
> - technical programs and courses that meet the career needs of individuals;
> - transferable programs and courses for students desiring to attend a senior college or university;
> - special occupational training and upgrading programs and services for businesses, industries, and agencies;
> - programs and courses in adult basic education, high school completion and continuing education;
> -counseling, career guidance, job placement services, and other programs essential to developing the potential of individual students;
> - programs and services to enrich the quality of community life;
> - effective and cooperative relationships with the schools, colleges, universities, government agencies, and employers across the state;
> - sound management practices and systematic planning to allocate the resources required to achieve the stated objectives of the North Carolina Community College System (Adopted by the N.C. State Board of Community Colleges, September 1987).

The commitment to industrial training has had a strong positive influence on the state's industrial development, which now claims one of the highest rates of industrial growth in the United States. Among the many exemplary programs offered through the

North Carolina Department of Community Colleges (N.C.D.C.C.) is the New and Expanding Industries program which has trained more than 180,000 in 2,100 companies. Designed as the nation's first training program solely to support industrial growth, the New and Expanding Industries Program has served as a model for other states since 1963. More than $14 billion in new industrial facilities have been built in North Carolina during the last five years alone. Many of these new companies have cited the state community college system's ability to train new workers as a strong reason for locating in North Carolina (Holdsworth 24).

Though the growth of the system may be considered impressive, the system faces many challenges and constraints. Studies by the Bureau of Labor Statistics in December 1987 indicate that by the year 2000, "almost all new jobs will be in high technology, information, and services as opposed to goods production" (Jones 20). It is predicted there will be more white-collar and fewer blue-collar jobs and that the fastest growing occupations will be the highly skilled, high-paying jobs such as lawyers, engineers, and computer scientists (Jones 21). Our rapidly changing economy is becoming service-oriented, information-focused, and more automated, changes that require a workforce that is in need of constant training, retraining, and upgrading (Mahoney 4).

As the United States moves further toward a high technology orientation, the nation may also be facing a major labor shortage, brought on by the unprepared status of the younger work

force. "On a recent ABC News close-up, entitled 'Illiterate in America,' it was reported that 80 percent of new jobs require more than a high school education but only three-fourths of U.S. students graduate from high school" (Braden 28). The present and future illiteracy rate in this country (15% of the total work force) presents a serious problem for employers in America and a challenge for America's schools.

A major challenge for community colleges is the key role they are expected to play in preparing the nation's work force. At a minimum, the work force should be functionally literate, technically literate (e.g. possess a basic understanding of computers), and possess skills that are adaptable to job and career changes (Jones 22). "Community colleges have established credibility with the business and larger community for providing the potential work force with the necessary workplace skills and have proven to be sufficiently flexible to address changing labor market demands" (Jones 22).

At the same time that the community college is looking to provide training for new workers, the technology explosion is creating a need to retrain current workers. Industry increasingly recognizes the need to retrain its work force, with 90 percent of the nation's largest companies employing human resource executives at the corporate level (Braden 28). To obtain this training, employers are turning more often to the community college systems across our nation.

Administrative decisions to diversify and offer more college-parallel courses in order to attract new clients or customers have placed the community colleges in direct competition with state colleges and universities. Both systems now vie for a share of the money available to support higher education. In a decade of declining enrollments, both systems actively compete on a local level for the same students. This competition will continue as long as both systems offer overlapping programs and have similar missions. As a result of competition, both systems have developed marketing and recruiting strategies which emphasize the differences between the two systems.

To compete with the long-held, well-deserved traditional liberal arts education offered by the four-year colleges and universities, the community colleges have cultivated the reputation of being innovative and highly responsive to local needs. Because of their strong local associations (local money supports operation costs and the Board members are all local citizens), the community colleges are in a unique position to capitalize on college/industry relationships as a means of fulfilling the claims of responsiveness and innovation. The prospect of enrolling hundreds of local industries' employees is a strong motivation for building or strengthening the college/industry relationships.

Across the nation, industry leaders appear eager to cooperate with educators and to participate in the development of cooperative programs. Charles F. Horne, former president of General

Dynamics, Pomona, California, had this to say concerning education/industry interactions:

> Industry and education must jointly prepare action programs for the recognition and motivation of students in industrial and vocational arts, as well as business and service areas (Burt 28).

Walter F. Carey, past president of the U.S. Chamber of Commerce endorsed the desirability of education/industry collaboration by saying:

> The businessman is a key element in this whole educational picture. Far better than any education or government administrator, he is in a position to know what his company's skilled manpower requirements will be for the next five years and the next ten years. And the smartest thing he can do is to let the educators in his community in on the secret so that they can adjust their programs accordingly (Burt 29).

> ...Educators can't be expected to do the job alone. They must have the help and cooperation of the business community (Burt 30).

Within North Carolina, there is strong support for industry training. In speaking of the system's commitments to industry, Robert W. Scott, President of the North Carolina Community College System, says, "When you open your doors for production, our community college system will have people trained to your specifications, ready for employment" (Holdsworth 25). Examples of putting that commitment into practice are cited by, among others, Jim Fordham, general manager of Carolina Glass:

> So when we decided to build this plant, we decided we had to have a fairly extensive training program. [Through the local community college] we've trained both operations and maintenance type people.
> Startup of any plant is a very complicated job, and because of the high-technology equipment we are using, this startup was particularly difficult. But as far as the skills and abilities of the people are concerned, we are already up to speed. The program we have had with Stanly Tech has been excellent -- super. We really could not have had better cooperation. They have bent over backwards to help us any way they could (Holdsworth 25).

When Philip Morris opened a plant in Concord, the plant manager, Newton Fowler, set up a pre-employment program with the local community college which resulted in "the smoothest startup in the history of Philip Morris" (Holdsworth 25). This feeling is echoed by the plant's director of employee relations, William Van Arnam, "Rowan Tech is not only doing a good job of training our people; our employees here are second to none because we find in this area the most outstanding work ethic" (Holdsworth 25).

A variety of factors motivate college administrators and industry leaders to involve themselves in cooperative education and training ventures. Recognition of these motivating factors can provide educators with innumerable ways for developing participation and support of industry leaders in college/industry relationships which will benefit both organizations.

Statement of the Problem

The need for a close interaction between the community college system and industry is widely affirmed. Industrial and

vocational-technical education have been studied as they relate to high school vocational curricula (e.g. Burt, 1967; Burns, 1966; Giddings, 1965; Keller, 1957) and as they relate to regional economic development (e.g. Blair, 1986; Appalachian Regional Council, 1985). However, little quantitative or qualitative research has been conducted in the North Carolina Community College System on college/industry relationships. While there certainly are many types of college/ industry relationships in existence, these vary in the extent of interaction and usefulness to either sector. Many colleges' approach to working with industry is piecemeal and unorganized without clear objectives, procedures, or evaluation. According to Bevelacqua (1985), the following scenario is not unusual:

> Many educational organizations have never discussed their own efforts toward business and industry before. Many of the organizations' employees are unaware of the efforts of their colleagues and, therefore, may be using differing, even conflicting, methods, procedures, or guidelines. Most educational organizations have used or are using uncoordinated pilot tests, projects and *fiat accompli* organizational development techniques (5).

Using the piecemeal approach to working with industry leads to several problems. First, having no agreed-upon objectives and procedures in place leads to inadequate evaluation of the services delivered, which in turn diminishes the effectiveness of planning new programs for the same industry. Second, with limited internal coordination and communication, there is no one person who will be held accountable for the

delivery of services. No one person speaks for the organization; many individuals in the organization, at one time or another, attempt to commit the organization's resources for various projects. No one takes responsibility; everyone points fingers. Third, industries follow an accepted and expected protocol which includes timely responses, quality product delivery, personal attention to customers, accurate billing, competitive pricing, timely refunds, and professional marketing and advertising. The protocol of the educational organization tends to be substantially different from that of an industry. An unorganized approach to working with industry may result in a serious breach of expected business protocol and the loss of the desired cooperative interaction (Bevelacqua 7).

The problem and challenge, then, is to gather data on the types of college/business interactions that exist in North Carolina, to analyze these relationships, and to design a comprehensive plan for initiating and maintaining cooperative training relationships between the state's community colleges and its industries.

Research Questions

The following questions are investigated in this study:

Research Question # 1: What are the different types of college/industry relationships in existence in the NC Community College System?

Research Question # 2: From college administrators' viewpoints how extensive and effective are the existing college-/industry relationships?

Research Question #3: What person(s) within the college has/have responsibility for initiating and maintaining college/industry relationships?

Research Question # 4: How many people and what percentage of the administrative budget does each college allocate to support college/industry relationships?

Research Questions # 5: Are planning and evaluation of college/industry programs carried out?

Research Question # 6: Will changes in procedures (protocol) and mission be necessary for North Carolina's community colleges to work more closely with industry?

Research Question # 7: What types of problems do colleges face in attempting to work with industry?

Definition of Terms

This study utilizes the following key definitions as acceptable bases for research:

Community College: any one of the two-year, higher education institutions which offer an associate degree as the terminal degree.

Economic Development: an organized effort to attract or develop new business and assist existing business to expand or become more productive by providing retraining, upgrading, or entry level training to meet the needs of industry.

F.T.E.: One full-time equivalent is a student in membership for 16 hours of class, shop, or laboratory per week for 44 weeks, the full four-quarter school year. To determine the average annual F.T.E., the total membership hours reported for the year is divided by 704. Student membership hours for a quarter divided by 176 produce full-time equivalents for a given quarter.

JTPA: Job-Training Partnership Act. A federally funded program designed to assist economically disadvantaged and handicapped students with employment and educational services and opportunities. Part of the funding is based on the number of students who are placed in jobs directly related to the curricula in which they are enrolled or have completed within the last year.

Leadership: act of "influencing, guiding in direction, course, action, opinion" (Bennis and Nanus 21) in order to accomplish the goals of the organization.

Return-to-industry: a program to encourage community college faculty to spend time in industrial settings for intensive, hands-on training in technical and industrial skills.

## Significance of the Study

Many college/industry relationships fail for one of the following administrative (college) reasons: lack of clear goals and objectives for programs in industry; lack of knowledge of how industry is organized and the accepted ways of approaching industry; lack of willingness or lack of resources to provide staff to work with industry in developing cooperative programs; suspicion of motivations of industry in working with colleges, (Burt 39).

Likewise, industry executives may contribute to failed relationships through one or more of the following: lack of skill in articulating the industry's training needs; lack of understanding of the college's organization and "chain of command"; rigidity in operating schedules and protocol (Kopecek 19).

Educators and industry leaders have affirmed the need for cooperative efforts between colleges and industry, and it is believed that both systems can benefit from such relationships. Employers can gain desired training; reduce their training costs; participate in the development of present and future employees; enjoy the prestige that comes with college association; and fulfill a civic and community public service responsibility. Colleges benefit by offering courses of instruction and training programs which are attuned to the needs of industry and labor; increase their enrollment and, thereby, build a broader local financial base; develop personal relationships with industry leaders which ensure future support of programs and initiatives; and secure additional training facilities and/or equipment through "shared use" agreements (Burt 42).

The fact that the bulk of the literature is anecdotal in nature has caused several authors to note the need for further research. Gilder (1981) recommended that state policies on community colleges include the recognition of such a need. Two-year colleges should develop and disseminate specific information about industry-education linkages for the purpose of establishing new linkage at the local level (Gilder 7).

Peart (1977) also mentioned the need for further study about college and industry collaboration as he discussed the rapid growth and changes of adult education programs and the placing of greater burdens on the postsecondary institutions. "Educators," Peart said, "desire answers to many questions concerning industry/college relationships." The existing research concerning agreement is inadequate" (Peart 6). Gold, Jung, and Bushnell (1982) recommended that further research be conducted on education/industry relationships and that the government should establish policies concerning the field and its research.

> The federal government should collect on a periodic basis quantitative and qualitative data as rough but valid indicators of the scope of industry-education-labor-relationships.
>
> Information available on the extent and types of business and labor involvement with education is almost entirely anecdotal. If the building of effective relationships among these sectors is to be raised to the level of national policy, more reliable reports on the status of these relationships is essential (182).

A study of the existing North Carolina college/industry relationships will bring to light many innovative approaches to building college/industry relationships. An analysis of these approaches will lead to a selection of key elements to be included in a model framework which can be used throughout the community college system.

Using a rational, organized approach to planning, initiating, and managing college/industry relationships will contribute to

successful cooperative efforts between each sector. One result of this study is the collection of the data necessary to develop a practical framework for building and maintaining college/industry relationships in the North Carolina Community College System.

Organization for Remainder of Study

The following plan serves as a map for the remainder of this study. Chapter 2 presents a comprehensive review of the literature published since 1981 on the working relationships between community colleges and industry. Using the literature for only this time frame ensures that the data are fairly current and reflective of actual existing practices. Chapter 3 presents the methodology for the study. The findings of the surveys and interviews are presented in tables, graphs, statistical analyses and profiles in Chapter 4. The findings of the research are analyzed, and attempts are made to explain the more relevant reasons for various synergisms that exist in some college-/industry relationships. Chapter 5 consists of the key elements of effective relationships and a proposed framework for managing college/industry interactions. The summary, conclusions and the investigator's recommendations for further study are presented in Chapter 6.

# CHAPTER II

# REVIEW OF THE LITERATURE

## Why Colleges Should Be Involved in Industry Training and Education

Created to offer low-cost, community-based education and industrial training, the community college system is still in its developmental stage, not yet clear on the exact goals and mission it must fill in order to survive and flourish. Within the relatively short span of its existence, the system has changed its focus from offering primarily college transfer courses to sponsoring broadly based programs for a diverse population. Each state and even each school is allowed considerable autonomy in setting its goals and objectives. For that reason, there is wide diversity in the programs and direction that the colleges pursue.

At this point, most comprehensive community colleges appear to concentrate their goals and energies in two distinct areas: college transfer work and community-oriented training and activities. Bernstein cited current research that points to a trend of declining transfer rates of students from the community colleges to senior institutions. In some states, the transfer rate has slowed as much as 40 percent in a ten-year period (Bernstein 32). One strong role that is emerging for the system is an involvement in state economic development policies and programs.

Several indicators point to the theory that the community college system is becoming a primary delivery system for industrial training and education and that the system's capability of providing a well-trained labor supply may be its greatest potential asset in economic development. The available literature supports this theory.

The United States has a vast number of resources which should enable the country to remain on the leading edge of technology, production, and world sales. For example, the nation already has the world's most advanced technology in almost every field, an incomparable industrial infrastructure with which to turn new developments into products and processes, a unique entrepreneurial culture, the world's most effective capital formation capability, and the world's largest market served by one common language (Braden 29). The community college system, in turn, has the potential for reaching into every community in the nation to network a national economic development plan which relies on those same assets.

Involvement of business in education is not a new concept. Since the turn of the century, employers have shaped employees' skills to fit the company's specific needs. As this nation's productivity and competitive stance have been challenged, American corporations have made major investments to ensure employee education is an integral part of their efforts to increase productivity and garner their fair share of the world's trade market. For example:

A $200,000 investment by Motorola in special training for a group of manufacturing engineers requires all departments to spend at least 1.5 percent of their payroll totals on education or return funds to the Motorola treasury.

GE and hundreds of other companies are investing at least $30 billion a year to educate their employees in formal classes.

Management classes run by International Business Machines which spends $900 million a year on education, focus on IBM's own methods of doing business.

The independent, nonprofit Wang Institute in Tyngsboro, Massachusetts was established to offer graduate training in both business management and the technical complexities of computer software.

Rand Graduate Institute was begun by the Rand Corporation after attempts at collaboration with the California Institute of Technology and the University of California at Los Angeles failed (Solorzano 50-51).

According to the American Society for Training and Development, many U.S. corporations are rapidly increasing their spending on technical training of workers (Braden 28).

A study in 1982 by Long indicated that large industries have entered the field of education to make a profit or at least to save money by doing their own training (Long 2). However, small and medium-sized business firms may have difficulty in funding a training department. Jackman and Mahoney report that "Even wealthy firms are suggesting that they do not want to, nor can they afford to, increase their training programs" (Jackman 8-9). Freeing up the billions of dollars that business annually spends on education and training by allocating the education responsibility

back to the schools should allow that money to be spent on research, development, and domestic and international marketing. The net result should be the creation of more jobs for Americans and a better trained work force in general. Businesses and industries seem willing to allow the community colleges to take over the training function if key concerns can be surmounted.

One reason business has chosen to do its own educating is the difficulty in adjusting to the academic calendars and rigid schedules often set by colleges and universities operating on semester-length courses at prescribed times every week. Often, industries must yield to production problems and crises and, therefore, would operate best with flexible scheduling and options for last-minute changes. Another reason is that most college courses emphasize theoretical knowledge and broadening students' perspectives, while many companies want courses which emphasize specific job skills and business applications. It is not that industries want to *supplant* regular college courses for their employees, but rather wish to *supplement* what colleges offer.

Benefits to the College

It is precisely this gap between traditional education and the specific industrial educational needs which the community college system seems best equipped to fill. "In many ways, community, technical, and junior colleges are the best educational institutions to prepare the major portion of tomorrow's work force" (Jones 22). According to the Bureau of Labor Statistics

Report (1988), "Opportunities will be best for graduates of postsecondary school technical training programs, particularly programs in which students gain practical work experience" (Jones 23). There are many incentives for both the colleges and the community agencies to cooperate in setting up training programs and educational opportunities for employees.

Besides the benefit of expanding the student population base, improving public relations, and receiving economic rewards for these activities, colleges can gain significant other rewards by forming working relationships with local business and industry. On-going relationships with business and industry can expose faculty to modern equipment which colleges often can not afford. The relationships can allow campus professionals to stay in touch with techniques and ideas which are often well ahead of available published information (Brown 2).

The relationships also provide a "real world" orientation to the theoretical base of most college classes. This interaction between education and practical experience can act as a catalyst for the updating, revision, or development of new programs. Such relationships can be sources of prestige, giving a marketing advantage for the college's recruitment and placement activities (Brown 2).

Benefits to Industry

On the other hand, colleges can deliver the business/ industry specific benefits as well. College credit for the training of employees provides intrinsic rewards to the trainees,

immediate reinforcement of their efforts, and motivation for some to continue toward a degree. Granting college credit for the training is a certification that the college will be responsible for quality control of the activity. A second benefit is that colleges employ professional trainers who are experienced in providing training to adults and nontraditional students (Brown 6). Colleges are also able to offer auxiliary services, such as counseling, tutoring, record-keeping, and an on-going contact with the student. Finally, the low cost of the training offered by community colleges makes it an attractive alternative for employers seeking to upgrade the skills of their employees (Brown 6).

In providing training at the lower cost, the community colleges boast of flexibility in providing adaptable scheduling processes and payment arrangements, shorter response times, and either graded or non-graded coursework for curriculum or continuing education credit. Industrial surveys of the existing college/business interactions support these assertions as being realistic needs of industry. The evaluations available in the literature also indicate that community colleges do a fairly good job in measuring up to industries' expectations (Williamson 2).

Most states have communication and data base networks which allow individual schools to identify and locate community college personnel with special expertise and to deploy those people to meet specific industry training needs across the state. North Carolina, for example, has a telecommunication network with the capability of live video teleconferencing in all fifty-

eight community colleges. In addition, several community colleges are linked by computers to each other and to the state Department of Community Colleges office in Raleigh in a system called "Link-Net." Plans call for the expansion of this network until all colleges are on line by 1995. These efforts are being pursued because of a recognition that the state's industrial needs are changing rapidly, and to meet those needs, the state must have the capability of disseminating information quickly and efficiently. The nation as a whole must likewise be concerned with the changing priorities of its business and industry.

Community Colleges as Change Agents

Paul V. Braden had this to say about the community college system's management of changing industrial priorities:

> To maintain and strengthen industrial competitiveness in an area of rapid change will require continual reinvestment in advanced technology and life-long reskilling of the work force. Workers must be seen as fundamental assets integral to the management of change (Braden 29).

Moving the labor market toward a change orientation can be effected by affirming the value systems of today's work force. The modern, younger work force already possesses a resistance to doing things the old way (often interpreted by older supervisors as a lack of desire to work). In truth, according to Braden, the new workers (the younger generation) respond to goals rather than control, want greater participation, will make commitments, are anxious to assume responsibility, exercise discretion and think creatively. Workers today work for self-fulfillment rather

than for survival. They have a comprehensive, systematic understanding of their jobs and work best within a more flexible horizontal structure. It is this more flexible, multi-faceted work force which stands the best chance of being the answer to the change technology of tomorrow's industry, for this very adaptability is necessary for the retraining process to be effective (Braden 27).

Fortunately, community, technical, and junior colleges are known for their flexibility and ability to innovate. By understanding the emerging need for life-long continuous reskilling and education, the latent potential of the younger work force and the significant contribution to the national interest that they can make, community colleges are in a strategic position to be major change agents for American industries (Braden 29).

Job Redesign and Employee Participation

Job redesign and employee participation are two concepts involved in retooling the work force to increase productivity and to meet the demand of progressive technology. Both of these concepts, but especially the employee participation, are grounded in the management theories of Herzberg (1959), Maslow (1958), McGregor (1960), and Ouchi (1981). Job redesign and employee participation training are also opportunities for the community colleges to influence changes in management practices which exist in industry.

Job redesign is an effort to retain current employees by retraining them as the industry itself undergoes change. It

involves a commitment to education and training which must involve all levels of workers.

For the hourly workers, job redesign should include (1) an orientation to the concept of redesigning a job (why it is being done and how it will work; what changes it will mean for the individual), (2) technical and/or scientific skill development (techniques for improving work efficiency, quality control, or new manufacturing processes), (3) basic skill improvement (technical reading, drafting, writing, mathematics, and computer literacy). In addition, hourly workers usually need to be given workshops on planning, organizing, decisions, and thinking creatively (Huddleston 83-85).

Supervisor training for job redesign includes applying new leadership styles, making better decisions, delegating responsibilities, coaching, reinforcing, maintaining self-esteem and good performance, empathasizing with and supporting subordinates without removing the responsibility for action (Huddleston 87-90). Conflict resolution and reaching consensus are important concepts for both hourly workers and supervisors to learn during the process of job redesign.

Employee participation is a movement which is quietly gaining hold and crowding out the autocratic management styles of the 1930's and 1940's. Fukuda (1981) theorizes that employee participation may be the key to success for America's efforts to improve human productivity and quality of work life. The concept centers on efforts to utilize more fully the individual abilities of

the employees as company resources. According to Axtell (1981), "Employee participation is worker involvement in management-type activities: planning, problem-solving, decision making, and self-supervision" (Axtell 183). In the process, the employee is allowed to influence activities, yet the management does not give up the authority nor the responsibility for the results.

Specific case studies in Japan have repeatedly shown that employee participation improved human productivity and quality of life (Fukuda 76). Such notable companies as Proctor and Gamble, GM, IBM, Poloroid, 3M, Hewlett-Packard, Midland-Ross and Xerox, testify to the positive impact employee participation can have. "The one frontier left to industry (in essence, the one untapped resource), is the knowledge that lies within our own employees--knowledge that is accessible through worker participation" (Huddleston 92). Only a relatively few industries operate within this concept; therefore, the potential number of persons who will need training and retraining for this new management practice counts in the millions. Reinforcement, feedback, recognition, and training are provided to the participating employee as motivators and support strategies.

A review of the kinds of training that job redesign and employee participation demand demonstrates that the training needed is well within the capability and mission of the community college system. Both community and technical

colleges are key sources for assisting business/industry with the training needed to implement new management practices which can quickly improve both productivity and quality of work life.

According to industrial studies conducted by James Long (1982), computers are at the center of all high-tech fields. Micro-processor chips are revolutionizing manufacturing, communications, entertainment, and service occupations (Long 3). Computer literacy and basic computer skills will be required in most new jobs. Two-year training will not be enough in biomedical engineering and pharmaceutical technician jobs. Any large growth in these areas will be professional, not paraprofessional. Robotics will take over many repetitive manufacturing jobs. Computer Assisted Drafting and Computer Assisted Manufacturing will revolutionize engineering/drafting careers. Semiconductors are still a "hot" item (Long 4). Two-year graduates [in specified curricula] will not compare favorably with graduates from a six months' proprietary school. Communication fields are growing and changing rapidly (Long 5). These changes will form the bases for new efforts to offer job retraining to employees in these fields.

To foster a collaborative relationship, schools will need to listen to and work with business and industry, develop formulas to discuss and work out the implication of emerging needs for re-training, establish productivity and Quality of Work Life centers on each campus, assign full-time positions to this effort, and call on all companies in the service area at least once each year.

Schools must pursue a better understanding of what industry wants and what price they are willing to pay and to convince them of the school's ability to deliver service (Huddleston 107).

Economic Development Networks

Lagging productivity is a major issue in almost every discussion about the national economic slowdown which is manifested by, among other things, the growing trade deficit. One challenge for occupational education is to assist in efforts to reverse the economic down-spiral.

A significant cause of lagging productivity is the lack of advances in knowledge and education in the United States. Productivity is a relationship or ratio between the goods and services we produce and the resources consumed to produce them. In order to reverse the down-spiral of productivity, one must expand the concept of productivity so that it includes also the human resources needed to produce them. According to Huddleston, output must be expanded beyond the goods produced for the company and should include "improved profits for the shareholders, improved international position, improved benefits and quality to the consumer, improved quality of work life for the worker" (Huddleston 21). Therefore, it should be clear that simple product measurements are not sufficient descriptors for a society which places an increasing value on human concerns and human attitudes.

Real gains in salary are a reflection of real gains in productivity. When productivity growth runs at four percent and above,

real wages are growing at four percent and above. Over the last two decades, the level of productivity in American industries has fallen to near zero and sometimes minus levels. As our productivity growth rate declines and the United States is economically less competitive, our world market share declines. The smaller market share, coupled with a weakening dollar, means less capital for investment in productivity-enhancing technology and modern equipment to achieve and maintain a competitive edge. The U.S. now ranks fifth in standard of living compared with other countries, a drop from first place in 1972 (Huddleston 14). To maintain and improve our economy, the U.S. must invest in and redevelop the industrial base of the nation and that requires increasing human productivity.

> If the United States is to embark on a massive program of human resources development -- involving retraining of tens of millions of working adults -- the only existing system for delivering much of the needed training is that of the community and technical colleges (Huddleston 10).

Two key issues are repeatedly mentioned as being causes of lagging productivity: lack of technology--plants, equipment, processes, and lack of investment in human resources--knowledge advancement and human resource development (Huddleston 31). Economic figures indicate that human resource development is equal to or exceeds the value of technological advancement in past economic growth and should be given equal or more attention in years to come as a major source for economic recovery (Huddleston 31).

An investment then in human capital and technology should reduce inflation, reduce unemployment by increasing individual productivity, and thus increase the standard of living (Huddleston 33). A new framework which addresses the infrastructure problems inherent in our economy is needed to shore up our weakened American economy (Huddleston 37). That framework, known as a real supply-side economy, should include components of public education, employment practices, training, and social services as influences on the economy (Huddleston 40). It is important to realize that the framework emphasizes investments in both technology and human resources. The emphasis for educators and training programs is on the human capital investments which can lead to increased productivity, job satisfaction, and improved work attitudes. This theory is based on the research of such men as Dale Parnell, former President, American Association of Community and Junior Colleges and Edward Denison, senior fellow, Brookings Institution, who states that ". . . capital investment in equipment and machines accounted for less of the growth than education, training, and advances in knowledge" (in Huddleston 42).

Analyzing a multitude of data, Denison demonstrates the superiority that education and advances in knowledge have over traditional investments in capital and machinery improvements when applied to technology and manufacturing processes in periods of great growth (Huddleston 44).

"Industrialization," says Etzioni, director of the Center for Public Research in Washington, "requires a labor force that is motivated, educated, and trained to staff factories, offices and laboratories" (Huddleston 45).

Anthony Carnevale, consulting economist with the American Society for Training and Development believes ". . . we are just beginning to realize the importance of the human factor in production" (in Huddleston 46).

The idea that a high-technology society could be run by a small group of experts and staffed by a large group of people with rudimentary knowledge of the basics is obsolete. A "high tech" society must be based on a work-force which has superlative technical skills, is adaptable to change, and which is motivated to succeed.

Growth of a human resources perspective among work institutions and a lifelong learning perspective in education has created an opportunity for collaboration among and within education, business, labor, and government. Collaborative councils are but one among many means for linking education, industry, and labor issues. These councils may be identified by other similar names, such as Industry-Education Councils, Community Action Councils, or Work-Education Councils. The Private Industry Councils (PICS) initiated by the federal government under the Comprehensive Employment and Training Act (CETA) also have the characteristics of a collaborative council (Gold 2). To promote the establishment of collaborative

councils, Gold (1982) suggests that the councils be set up by these criteria:

> - they have representative membership of major community sectors intended to jointly serve the interests of more than two sectors
> - they are self-organized, performance-oriented
> - they represent shared responsibility
> - they have organizational activity which is sustained through a formal council organization with a staff director or coordinator (Gold 6).

Attempts to isolate the educational institutions from their political and economic constituencies are doomed to failure (Gold 3). Businesses emphasize training both in task skills and interpersonal relations. Team effort is necessary to get the job done. In education, team efforts are seldom emphasized, and this difference may be the single most significant barrier to communication across the two sectors (Gold 3).

Today, well over 150 independent collaborative councils are functioning across the nation; a few of them serve as state-wide councils on economic development (Gold 2). Along with diverse specific objectives, the councils also concern themselves with the broad issues of education, skill training, and socialization of young people for work and adult roles (Gold 4).

Because the skill levels needed for entry-level positions in industry are becoming more sophisticated, employers are more motivated to work closely with educational institutions. As Gold states:

> Maintaining a labor supply that is aligned with the demand for labor is cost effective and requires the participation of knowledgeable business, labor, and education leaders in developing labor market information, forecasting the economic development and employment needs of the local and regional economy, preparing short- and long-term guidance for curriculum developers, career guidance planners, students, and the community at large (Gold 14).

Educators may pride themselves on their unique approaches, sense of accomplishment, and individuality. Yet when these concepts are carried into the classroom, they may counteract the very concepts of team effort and organizational goals which are the backbone of successful businesses and industries. (Gold 3). It is important that professional instructors who educate adults strike a balance between promoting individuality and teaching about the values of the work place. A good attitude toward work may relate to the motivations utilized by employers to enhance their employees' productivity. It is important for employers to clarify with young workers the work habits required of a permanent upwardly mobile employee (Russell 74).

Brown also points out that the business world is utilitarian-focused (Brown 2). Projects are evaluated first on a cost analysis basis and then on their ability to solve a company's problem. The social good or creativity of an idea or project is not among the major considerations for its acceptance or implementation (Brown 2). Corporate needs tend to be functional, short term and mission-oriented. Training offered by the community colleges should be matched to these priorities

(Samuels 1). Education and training offered through community colleges can be one bridge between the traditional bureaucratic/autocratic profit/loss management strategies and the more humanistic, resource development approaches which are designed to improve the quality of work life as well as increase productivity of individuals.

A major research project in Central Ohio, conducted by J.F. Russell, (1978) sought to gather data on relationships between educational institutions and employers. Two surveys were used to gather data from industry -- Emergency Occupations Research (EOR) and Employer Association Survey (EAS) and two from educators Survey of School Officials (SSO) and Values Survey (VS).

The various surveys indicated a definite link between unemployment and lack of education, training, or experience (Russell 23). This line of reasoning indicates that if unemployed people were trained in marketable skill areas, and had the right educational background, they would become employable (Russell 23). Vocational Education plans for secondary schools are often based upon manpower needs forecasting data. The same is true, to an extent, for implementation plans for community college curricula.

When surveyed, industry/business leaders indicated a high willingness to cooperate with educational organizations. The educational services most helpful to respondents were these: "research findings for applied fields, teaching economics to

employees, clearinghouse regarding available educational services, placement of students into jobs" (Russell 53).

Industry respondents indicated that education should devote time and effort to teaching health and safety issues, desire to learn, citizenship, job readiness, and imparting background knowledge in its traditional school subjects (Russell 54-55).

Surveys indicate there is significant difference in what a teacher sees as behaviors and attitudes of a good employee and what a student sees (Russell 71). Values of the business world may be different from one's individual values (Russell 72).

College/corporate partnerships can develop programs to meet corporate needs for personnel development. A study by William Brazziel documented the efforts of 116 colleges and universities to identify and plan staff development programs to increase workers' productivity and at the same time reinforce strategies of lifelong education (Brazziel 2). Studying labor market needs and placing graduates in industries with which the college has good relationships are quick methods of building cooperation. These positive relationships can then be used to expand the college's service to the industries. Targeting efforts in only a few program areas increases the college's effectiveness.

Mildred Bulpitt's study endorsed the idea of Supervisory Management Development Programs for local business and industry personnel. The primary goal of these programs is to offer college-level supervisory training for present and prospective supervisors to help them advance on the job. This is accomplished

by offering courses designed to correct (1) out-of-date professional skills, (2) inadequate leadership skills, (3) lack of knowledge of basic management principles, (4) ineffective person-to-person communication, and (5) inability to apply creativity and innovation to problem-solving (Bulpitt 1980).

In a presentation at the 1985 annual meeting of the Commission on Institutions of Higher Education, Frank Samuels reiterated the fundamental role that improving the quality of the performance of the American work force will have on increasing productivity. According to Samuels, the community college can meet the needs of three levels of training: remedial and pre-entry level training needs (literacy and job seeking or retention skills), entry-level training needs (diploma or associate degree level education), and critical skill needs (high technology job skills or specialized training to meet local industrial requirements).

Seymour Eskow (1982) promoted the idea that college/industry linkages should establish a set of national strategies that will keep current workers on the job and equip new workers with the skills needed for tomorrow's jobs (Eskow 2).

> The success of our efforts to reindustrialize, to create the new service economy that will be powered by information and knowledge, will depend on our ability to replenish and improve our stock of human capital. What our people know will determine our future, what our people can do will determine whether our economy and our country work (Eskow 2).

This national human resource development strategy for the United States is an important present and future goal for the nation's community colleges.

According to Eskow, to increase the American standard of living, education and training must be aimed at helping people understand the new economy and provide them with the basic literacy for functioning in such an economy. The education process must allow workers to acquire new skills as the changes in technology and business operation make old skills obsolete (Eskow 8).

Any cooperative relationship between college and industry must involve a daily flow of information between the two partners so that weak programs may be strengthened, obsolete programs discontinued, and new programs created (Eskow 9). It is also important to coordinate and plan the location and sponsorship of each program carefully to avoid waste and duplication (Eskow 9).

The organization and promotion (in policy making and in funding agendas) of a national economic and human resources development program have been endorsed by many who have researched industry needs. Eskow suggests these functions and obligations as important components of a Human Resources Development mission:

> - To create in each state a business and industry diffusion similar in mission and function to agricultural extension, that will bring into every community state-of-the-art information on economic development and technological innovation. The HRDC network will be connected to the univer-

sity centers and other research and development agencies of the state and nation.

- To coordinate the training programs of the community provided by the schools, colleges, unions, and business and industry.

- To monitor and evaluate the training programs available in the community.

- To create the community master training plan and strategy.

- To see that new training programs are developed and introduced by the appropriate training agency.

- To bring into the community educational and training resources not available in the community itself (Eskow 17-18).

The procedures for setting up the college/industry interactions is a relatively simple one of securing commitment, organizing, development, marketing, delivery, and follow-up. To establish successful economic development networks, commitment at the state level, from the governor, the legislature, and the state college board is imperative. Commitment from within the colleges themselves, including the support of the president, the board, and the professionals on the business center/economic development council staff, is also important (Burger 39).

Community colleges must be responsible for making initial contacts with business and industry, developing training

programs specifically for companies and marketing the colleges' programs and services to business and industry (Boyd-Beauman 20).

Each community college should consider developing an economic development action plan for its institution. This plan should include the following activities:

1. Developing and maintaining cooperative efforts with Chambers of Commerce, local government officials, universities, Private Industry Councils (PICs), and public and private providers of vocational education.
2. Establishing close coordination with the business and industry community to market the services of the community college.
3. Developing and coordinating advisory groups, assuring input into all economic development activities.
4. Developing an organized public relations program for economic development.
5. Providing in-service training to upgrade instructors to meet the needs of new high-technology industries.
6. Coordinating the development and implementation of curriculum to meet the needs of business (Boyd-Beauman 20).

State Initiatives

In response to the attention focused on the need for economic development programs, several states have organized offices and/or associations of economic development. These offices have been helpful in disseminating information about strategies for improving the regional economy, as well as serving a central voice for policy formation and implementation at the state level. The Illinois Community College Economic Development Association was founded on June 20, 1984. It is a means of marketing and promoting community college economic

development activities and a strong network to exchange information on job training, business center, and other economic development concerns (Burger 39).

Virginia's community colleges are ready-made facets of industrial training and provide a "reciprocal opportunity for regional economic development on a cooperative basis" (McMullen 1). Colleges in this system sponsor "educational partnership" programs with regional industries, a contractual arrangement for offering specialized instructional services. This approach appears to work well for the state's thirty-three community colleges and their constituent industries.

Texas joined many other states in 1982 to recommend the establishment of state policies for economic development and manpower training, as well as sources of funding to initiate and support programs for training workers. Changes in mission and purpose statements, state-level identification of training needs, and an assessment of the community colleges' potential for meeting those needs were also recommended (Campbell 6-8).

Employment training in California is dispersed among a variety of federal, state, and local agencies, each with its own administrative agency, advisory group, policies and practices (Farr 3). This causes duplication of efforts and competition for funding. One result of the 1983 Conference on Linking Community Colleges and Business was the recommendation that a coordinated system of service delivery be adopted to make more efficient use of resources and ensure more relevant training (Farr, 6).

There are, however, some existing relationships between private economics development organizations such as the Sacramento Area Commerce and Trade Organization (SACTO) and other institutions: industry, business, labor, the professions, government, education, health services, cultural foundations, and recreation. SACTO acts as a single, centralized contact for firms that are interested in locating in the region and is a part of a joint committee on industry and education collaboration (Farr 12). California's community college system could profit from modeling its industry interactions on the tight organization, clearly defined roles, funding formulas, and broad-based participation in planning evaluation of services that have made SACTO a success.

Following the inclusion in 1981 of "responsiveness to industry" as a research priority for the N.C. Community College System, the N.C. Department of Community Colleges funded a research project to address that priority area. The project involved fifteen community colleges in the system where interviews were conducted to ascertain various information. Some of the objectives of the project included the following:

> identify the elements that enable community colleges to respond to personnel training needs of industry; design professional growth opportunities for college/industry liaisons; identify policy between colleges and industry; and propose a long-range research program in college/industry relationships (Clary 4).

The top six of nineteen elements considered important in college/industry relationships referred to commitment, policy, or procedures. Those six elements were: (1) reliability and creditability of the institution; (2) strong commitment and support of the college president and Board of Trustees; (3) high quality instruction; (4) quick responsiveness to requests; (5) custom-designed courses; (6) adaptability of institution to industry needs and protocol (Clary 7).

One highly significant conclusion of the study was that both industry and college personnel were seen to have a primary commitment to long-term, continuous training programs with existing local industry. Training, in this sense, was not only for new industry on a "one-shot" approach, but was viewed as a planned effort to sustain economic development over many years.

Research conducted in 1981 by the Research Unit of Florence-Darlington Technical College concentrated on an assessment of area employer needs but included suggestions for building college/industry relationships. It was concluded that an employer needs assessment survey could be used to (1) allow and encourage greater communication and contact with the business/industrial community, (2) determine if there are discrepancies between the technical training needs of industry and the college's educational programs designed to meet those needs, (3) receive input to be used in determining educational priorities of the community college system, (4) collect opinions, attitudes and ideas toward community colleges which would be of value when

upgrading and revising educational programs and services (Williamson 5).

Specific recommendations which were made as a part of the research project included the following:

(1) Continually evaluate, on a periodic basis, extent to which educational programs meet the needs of students and industry in the service area.
(2) Explore the possibility of providing additional short-term, in-service upgrading programs, specialized refresher courses and workshops for personnel already employed in business and industry.
(3) Develop a brief, structured, informative orientation program for all continuing education instructors.
(4) Establish additional cooperative education programs with local business and industry.
(5) Place increased emphasis on maximum use of advisory committees.
(6) Schedule and utilize opportunities for faculty professional development.
(7) Maintain personal contact with industry and keep communication lines open (Williamson 2-3).

F.I.T. Centers

Over the past two decades, North Carolina industries have invested millions of dollars to retool their manufacturing processes with new equipment. Recognizing the need for providing the industrial work force with newer, broader technical, supervisory, and problem-solving skills, North Carolina created in 1981 a program called F.I.T. (Focused Industrial Training). The F.I.T. program sets up the same type of customized training to existing traditional industries as that which is provided to new

industries. Included in the training is management and supervision training, as well as specialized skills instruction. Each program is tailored to fit the needs of specific industrial sites, and there is a significant feeling of participation and ownership felt by the industry's managers and supervisors. The F.I.T. program began with 19 pilot programs in community colleges across the state and a budget of $1.4 million. Last year (1987), the program delivered customized training to 5,323 employees in 645 industries. The Department of Community Colleges (DCC) plans to add six F.I.T. centers in 1989-90 and an additional four more in 1990-91. The system also hopes to increase the funding for each center from $75,000 to $95,000 per year (DCC, 1988 13).

Arizona has also developed a statewide coordinated system for job training, utilizing the community college system as a vehicle for service delivery. In Arizona, the state legislature has designated postsecondary institutions to be responsible for economic development. As a result, Arizona is the seventh most popular state for companies to relocate in and third in the nation as being another Silicon Valley (Boyd-Beauman 18).

A study in 1981 conducted by the Arizona Office of Economic Planning and Development revealed that within each state community college at least two individuals are involved in planning for economic development.

> The positions of these individuals are rarely the same for any two institutions. It appears, however, presidents (77 percent) and deans of career/occupational

> education (61 percent) are generally responsible for economic development. In some cases a management team is responsible for community economic development activities. Some institutions reported that responsibilities are pervasive. A number of associate deans, directors, and chairs have these responsibilities (Boyd-Beauman 19).

One approach to addressing regional and local economic development issues is the organization and operation of Small Business Centers on the various community college campuses.

Small Business Development Centers

The American Association of Community and Junior Colleges has established a Small Business Training Network which has linked 186 two-year colleges to the district offices of the U.S. Small Business Administration. To date, this linkage has organized and delivered more than two million hours of short-term training in forty-seven states. By 1990, it is anticipated that all fifty states will be a part of the network (Eliason 32).

The Small Business Development Center program is a federal/state partnership. Annually developed cooperative agreements fund the delivery of program services. Each state must match federal allocations on a dollar-for-dollar basis. This is an important component of an economic development plan or delivery system both across the nation and across our state.

A recent study conducted by Kasarda (Chapel-Hill Business School) and Birch (Program of Corporate Change and Job Creation at M.I.T), pointed out the tremendous influence of small business growth in North Carolina. During the three-year study period (1984-1987), "763,000 new jobs were created, while 365,000

jobs were lost for a net gain of 398,000 jobs in the 10th largest state" (Asheville Citizen 6b). The largest portion of the new jobs, 520,000, came from new business start-ups; 233,000 from growth in existing companies; and 10,000 from companies' moving their operations into North Carolina. Those companies with fewer than 100 workers contributed nearly three-fourths of the new jobs. Considering these statistics, there is a critical need for providing state and local assistance to owner/operators of small business enterprises. Several states have provided model programs or early initiatives in delivering this type of assistance.

Providing comprehensive services and resources to the small business community has become the mission of the Oregon Small Business Development Center network, which operates in all fifteen Oregon community colleges. Established in 1984, the system combined existing resources and programs and added new ones to offer a wide range of management assistance services, which include "business counseling, long-term educational programs, short-term workshop and seminars, and supporting physical resources" (Cutler 29). Oregon's system was the first community college-based Small Business Development Center network in the United States, and it has received national attention as an innovative model project for providing assistance to the small business community (Cutler 29).

In Illinois, community colleges serve as an integral part of the state's economic development efforts by training people for

jobs and creating and retaining jobs through the network of business centers on all Illinois community college campuses (Burger 36). This provision of training and assistance is a significant factor in attracting and retaining industry. Illinois has a professional staff capacity to assist with, and initiate, coordinate, conduct, and follow through with, an extensive industrial development effort at the local level throughout the state (Burger 36).

Technical colleges in South Carolina have worked with the Small Business Development Center at the University of South Carolina to form a state-wide association of Small Business Trainers to share materials and resources. The purpose of this community college/university liaison is to develop greater outreach to small businesses throughout the state (Eliason 34).

Mahoney's research in 1982 was based on survey of 37 colleges which have developed discrete college/business/-/government/community group centers as a result of colleges' concerted efforts to tap marketing they had touched only peripherally in the past. Mahoney reviewed the federal manpower and occupational education programs which have provided incentives for community colleges to pursue human resources and economic development activities. Involvement in these programs can be attributed to colleges' perceptions of the broad applicability of their programs (Mahoney 3); to their confidence in the quality of their programs and service to the community; and recognition in their ability to meet training needs (Mahoney 4).

The literature lists these as general goals for most college-business centers:

1. To intensify and coordinate college contacts with community organizations,
2. To facilitate community organizations' contact with the college.
3. To market college programs to potential audiences underserved or unserved in the past.
4. To increase the numbers of contracted educational programs provided by the college.
5. To assist faculty to initiate contacts, develop programs, and deliver them.
6. To help the college maintain a high profile in the community by clarifying the college's mission and services (Mahoney 5).
7. To define and address the college's economic development responsibilities.
8. To assist the college to respond to a variety of local, state, and federal economic and human resource development policies and programs (Mahoney 6).

About half of the Small Business Center Network members base their operations in the continuing education divisions of the community colleges. Many larger institutions employ a small business specialist to assure local small business trade groups that the college is committed to meeting specific industry needs (Eliason 20).

In addition to setting up and funding Small Business Centers on or near the campus, the schools can also integrate this assistance into regular curriculum offerings. Traditional courses of the business division of a college can be modified to serve small businesses more effectively. Modifications may include a certificate program in small business management; recruitment

of continuing education attendees for traditional marketing and accounting; offering elective courses in such high interest areas as developing a business plan and loan acquisition; breakfast seminars; and projected market analyses (Eliason 21).

Customized Job Training

Customized Job Training is one type of college/industry relationship which is gaining popularity as an appropriate, effective way to meet the "unique needs" of local industries and specific firms (Kopecek 4). The instructional program is designed, organized, and administered by college personnel with considerable involvement of industrial representatives. Kopecek (1984) indicated that these factors should be considered before a college decides to initiate a Customized Job Training program (CJT): local needs and attitudes, need to re-focus the instructional process, institutional support and commitment, and resources available outside the institution (Kopecek 6-8).

Clark and Kopecek emphasized the need for strong internal communication networks and a faculty with industry experience, as well as a "practical applications" outlook. In most CJT programs, the faculty is recruited from industry and teaches as adjunct faculty because of the highly specialized nature of the training needed.

A strong component of a successful Customized Job Training program is a competency-based approach to task identification, instruction, and evaluation. Several experts have recommended the DACUM (Developing a Curriculum) program as a

quick, inexpensive method for determining which competencies should be included in the training program.

As with other major decisions, a college's decision to offer a customized training project should be based on analyzing the college's resources and accepting only those customized training jobs which can be done with integrity and confidence.

Advisory Committees

Advisory committees provide a direct link between the community college and the business sector. The purpose of these committees includes the following activities:

1. Recruiting new students from the business sector by personal involvement of each member both in their own company and outside their company.
2. Ensuring that the subject material is validated in the real world of business by an on-going audit of all objectives.
3. Developing new material that reflects new business techniques by researching, writing, and implementing objective material.
4. Providing specific problem activities for students to serve internships preparatory to graduation.
5. Employing students and graduates on a part-time or full-time basis.
6. Providing business and political expertise that satisfies the needs of the student's overall professional development (Bulpitt 57).

College Cooperative Education Program

Within this program, the college works with business and industry in the delivery of a cooperative education program which integrates classroom and laboratory study with specific planned periods of work experience (Bulpitt 1). For career-oriented,

degree-seeking students, the program provides academic credit for on-the-job training and allows students to gain meaningful work experiences while continuing their studies (Bulpitt 4). An added bonus is that the planning stages of the program involve top industry supervisors and managers and bring to their attention the presence of bright, enterprising employees. Other advantages for participating students include the opportunity to test, realistically, career choices, to participate in career-related work experience, and to earn funds to support education and personal goals (Bulpitt 6). For industry, these programs serve as a "cost effective means of training and recruiting potential graduates" (Bulpitt 7). Cooperative education also allows industry the opportunity to contribute to and support the local community college and help bring together the world of work and the world of education.

Contacts established through cooperative efforts have led to permanent job placements for students enrolled in occupational programs, recruitment of additional students who are employed at cooperative training sites, generation of on-site training programs within the businesses involved in the program, and input from industry regarding curriculum revisions/additions (Bulpitt 26).

Shared Resources

Sharing resources is a major component of the synergism of effective college/industry interactions. One method of sharing resources is through technology transfer. According to Parsons (1983), technology transfer is

> a dissemination strategy integrating knowledge of the latest technological practices, procedures for their implementation, tactics for their integration into existing delivery systems, and evaluation to measure the achievement of technological mastery (Parsons 1).

In many cases, industries already have the equipment necessary to train their employees. Most colleges cannot afford to purchase models of this equipment. Sharing resources is a logical way to deliver the needed training at costs which are not prohibitive. Sharing resources does, however, require careful planning and coordination so that equipment is available when the training needs to occur.

Of the factors which determine whether an industry locates in a region, the availability of labor skills ranked first and the presence of academic institutions ranked fourth (Parsons 5). Developing a college/industry program which includes shared resources and technological transfer can contribute to the economic development of a region and system-wide of a nation (Grote 14).

Policy Needs

A 1981 study, compiled by Jamison Gilder, made recommendations on policy changes which would support community colleges' efforts to collaborate with local industries in providing

education and training opportunities. These recommendations followed a request from AACJC in 1980 for four state assemblies to evaluate state education policies and to recommend changes that would enhance lifelong learning. The four states which participated were North Carolina, Florida, New York and California. The three most critical policy needs identified by the study were mission, finance, and control issues. The seven recommendations and/or policy statements offered by the state assemblies may be summarized as follows:

(1) State and federal agencies strongly support the idea that a well-funded lifelong education program is essential to achieving the national goals of lowering the rate of inflation, increasing productivity of workers, and decreasing unemployment.

(2) States should change the current patterns of funding based on generation of full-time equivalent students.

(3) State boards should establish and support interstate projects for lifelong education.

(4) State governments should develop funding models which facilitate lifelong education among public and private sectors.

(5) State agencies should develop communication networks and coordinated planning between public and private agencies.

(6) Special circumstances of lifelong education should be considered in funding mechanisms, such as state aid formulas, student financial aid formulas, and tuition charges.

(7) States should appoint task forces charged with continual study of lifelong education providers (Gilder 12).

The concept of lifelong learning has significant application in the community colleges' mission. The idea is integral to the provision of training and education to employees to ensure the continual upgrading of their skills and competencies. Thus, the policy changes recommended in 1980 have relevance as they are some of the same issues being faced by community colleges as they wrestle with decisions on how best to serve their communities' needs.

Summary

The literature reviewed provided information about the benefits each sector can enjoy when colleges and industry work together to provide training to upgrade the workforce. The various types of college/industry interactions currently available in American community colleges were reviewed and summarized. The most common types of cooperative programs include participation in (1) economic development networks, both national and state-level programs, (2) F.I.T. Centers and Small Business Centers, (3) customized job training, (4) advisory councils, (5) cooperative education programs, and (6) shared resources.

Much of the information available was largely anecdotal or descriptive and was published through the publishing component of the American Association of Community and Junior Colleges. Few independent research studies were available to support the findings in the literature.

## Conclusion

The information available in the literature on the types of college/industry interactions indicates that cooperative efforts are desirable and should be expanded. Based on local needs and available resources, individual community colleges can expand their services to local industry; however, state support and incentives are also necessary to accomplish measurable economic development objectives. Within the literature, procedural as well as policy issues involved in initiating or expanding college/industry services were discussed. What remains is to compile this information into a usable plan for the community colleges to follow in their college/industry programs.

# CHAPTER III

# METHODOLOGY

## Research Design

Various quantitative and qualitative nonexperimental methods were utilized in carrying out this study. A comprehensive study of the literature published since 1981 on college/industry relationships provided the basis for research questions and served as the springboard for developing a model framework for the North Carolina Community College System to use in setting up and maintaining college/industry programs. A self-reporting survey, field-tested by four community colleges in the western region of the state, was used to gather data about the number and quality of community colleges/industry relationships. Descriptive research techniques were used to provide in-depth information about several programs evaluated as highly successful.

Qualitative research has, over the past decade, gained acceptance and validity as a means of synthesizing observation and theory (Gay 189). The integrity of the research and a systematic approach can lead to valid and important information. As a part of the study, triangulation was used to bridge the gap between traditional hypothesis-testing research and the intuitive, practical, innovative approaches which exist in organizations in

action. Triangulation may be defined as "the use of multiple data sources to test hypotheses." Donald Schon, M.I.T. scholar and father of the "new paradigm" research, advocates it as a "reflection on/in action" (Schon 52). Triangulation was employed in Chapter 4 in the analysis of data, with the various modes being the suggestions for organizing and maintaining college/industry relationships as found in the literature, the approaches being used by the North Carolina Community Colleges as identified by the survey, and an analysis of the data on the economic impact that higher education has on regional development.

In those organizations where college/industry relationships were reported by the respondents as especially dynamic and innovative, extended, structured interviews were conducted with administrators having primary responsibility for initiating and/or managing industry/college relationships. Profiles were then written on six colleges, with attempts made to include the college administrators' assessments of what made their programs successful. In developing the framework in Chapter 5 of this study, the triangulation method was used in the synthesis of state-level policy needs, colleges' organization for delivering services to business and industry, and college/industry directors' responsibilities.

Population

The population of the study was limited to the fifty-eight community colleges in the North Carolina Community College System. The questions on types and extent of industry/college rela-

tionships were and are important to each of these institutions because all share basic commitments to community-based service and education and have similar missions.

While there are differences in the state-level organization and administration of the community college systems across the nation, there are also ample similarities in mission and purpose for this study to have national importance.

A survey (see Appendix A) was sent to the chief academic officer (dean) in each of the fifty-eight institutions. The chief academic officers were chosen as the respondents with the assumption that these persons know most about the schools' involvement with outside agencies, as well as the general daily operation of the college. Administrative lists and mailing addresses were obtained from the North Carolina Association of Community College Instructional Administrators.

Using information from the surveys, six colleges were chosen as having especially successful college/industry relationships. In-depth interviews were conducted at these six schools with key administrators who have major responsibility in managing their school's college/industry relationships. Data from these interviews were used to write brief profiles of the six schools and to list the factors which lead to successful interactions with area industries. These data were then compared with the essential elements of successful college/industry relationships as found in the literature. Some of the researcher's basic assumptions about organizational theory

and action were used as the basis for several interview questions.

The Instrument

A survey instrument consisting of three sections was used. The sections were: (1) an eleven-item Survey of College and Industry Relationships, (2) one open-ended question regarding suggestions for improving college/industry relationships and a listing of major companies/industries with which North Carolina Community Colleges have established relationships, (3) identification data which were used to determine demographic data. Each of the three sections can be described as follows.

Section I of the Survey of College and Industry Relationships (SCIR) determined (1) the range of relationships between each college and its local industries, (2) the extent and effectiveness of those relationships, (3) the person(s) within the college who are responsible for and who actually carry out the responsibility for initiating and maintaining industry/college relationships, (4) the extent of the college's commitment of resources and money to establishing and maintaining industry/college relationships and (5) tabulation of the problems of planning and evaluating college/industry programs.

Section II of the Survey (SCIR) allowed for open-ended suggestions for improving college/industry relationships and a listing of North Carolina industries which participate in industry/college programs. This information was used in organizing the

conceptual framework for proposed use by the North Carolina Community College System.

Section III of the Survey of College and Industry Relationships provided the names and titles and institutions from which responses to the survey were gathered. Demographic data were obtained from the North Carolina Department of Community Colleges on the size of each school, service area, and budget allocations for each college. The demographic data were then compared to the administrators' evaluations of the extensiveness and effectiveness of each college's industry/college relationships.

The survey was reviewed for clarity and accomplishment of purpose by five research practitioners: Jack I. Bardon; Dale Brubaker; Harold Snyder, and Edwin Bell, all faculty members at the School of Education University of North Carolina at Greensboro; and Robert Pittman, Professor of Educational Research, Western Carolina University.

Field Test of the Instrument

A field test of the instrument was conducted within four schools in the western region of the North Carolina Community College System. The respondents were the *academic directors* at each of these schools. In addition to completing the survey, these four directors were asked to answer pertinent questions about the survey instrument (See Appendix B). These four schools were later included in the official survey, using the *deans* as the respondents.

The field test had a 100% return rate. As a result of suggestions from the field test respondents, the order of two questions was reversed and the second part of question 13 was added. These minor corrections were made before the full survey was conducted.

Data Collection

The chief academic dean in each of the fifty-eight community colleges in North Carolina was asked to complete the Survey of College and Industry Relationships.

Initial responses were matched against a master list of the fifty-eight colleges in the North Carolina Community College System, and ten days after the initial mailing, a follow-up letter was sent to any respondents who had not returned the Survey. A copy of the cover letter and the follow-up letter are attached (See Appendices C & D). A third method of data collection, a telephone call made to any non-respondents from the second mailing, was not necessary for the data to be considered representative of the community college system. A total response rate of 75% was considered representative of the population; however, a higher response rate, 93%, was attained.

Six colleges were selected (by analyzing responses to Survey Items 1-3) as having especially dynamic and successful college/industry relationships. Only those colleges with a combined rating of +1.5 or greater on the extensiveness and effectiveness questions were selected for follow-up interviews. These colleges were contacted, and interviews were arranged

with the individual identified by the survey (Items 4-5) as having major responsibility for initiating and maintaining the college/industry relationships. Interviews were conducted, lasting from one to two hours. The administrators interviewed were asked specific questions (See Appendix E), but were also encouraged to talk freely about other factors which contribute to successful college/industry relationships. Profiles of the college/industry relationships are presented in Chapter 4 of this study.

Data Analysis

Responses to the first eleven items indicated the range and depth of the industry/college relationships and were used to answer several of the research questions.

*Research Question # 1: What are the different types of college/industry relationships in existence in the NC Community College System?* Answers to this question were based on an examination of responses to Items 1 & 14 of the Survey. This information, along with data about geographic location and local population density, is presented in a matrix chart and table format.

*Research Question # 2: From college administrators' viewpoints, how extensive and effective are the existing college/industry relationships?* Answers to this question were found by examining the responses to Items 2 & 3 of the Survey. Data from this analysis were described in the narrative and presented as means and percentages. In addition, a comparison

was made between school size and the evaluated extensiveness and effectiveness of the relationships (Items 14 with Items 2 & 3). This comparison is described in the narrative and shown in graphs. A comparison was also made of the the responses to the commitment items (6-8) with college administrators' evaluations of the extensiveness and effectiveness of the relationships (Items 2 & 3). This information is described in the narrative and presented in a graph form. An independent measure of effectiveness was a comparison of the responses to Items 2 & 3 with data from regional or local economic impact councils. This information is described in the narrative and is presented with the researcher's interpretations.

*Research Question # 3: What person(s) within the college has/have responsibility for initiating and maintaining college/industry relationships?* Data used to answer this question were found in an examination of the responses to Items 4, 5, & 6 of the Survey. This information is described and presented in percentage format in the narrative.

*Research Question # 4: How many people and what percentage of the administrative budget does each college allocate to support college/industry relationships?* Information to answer this question was found by examining the responses to Items 6 & 7 of the Survey. A comparison of the responses to these two items gave an index of institutional commitment to college/industry relationships and is presented in graphs and described in the narrative.

*Research Question # 5: Are planning and evaluation of college/industry programs carried out?* Information to answer this question was found by examining responses to Item 9 of the Survey. These findings are listed in percentage form and described in the narrative.

*Research Question # 6: Will changes in procedures (protocol) and mission be necessary for North Carolina's community colleges to work more closely with industry?* Responses to Items 8 and 11 of the Survey yielded the data for answering this question. This information is presented in percentage form in the narrative. Suggestions for changing the procedures or protocol were drawn from responses to Item 12 and are listed in the narrative in Chapter 4 and are included in the framework presented in Chapter 5.

*Research Question # 7: What types of problems do colleges face in attempting to work with industry?* Data from responses to Item 10 of the Survey, as well as information from the Review of Literature, were used to answer this question. This information was categorized and is described in the narrative.

Data from Items 11 & 12 was used in presenting the conceptual framework in Chapter 5 of this paper. Results from these two items are also presented in percentage and descriptive form in the narrative of Chapter 4. Six schools, where responses on the survey items indicated a strong working relationship with local business and industry, were chosen as sites for in-depth interviews. Interviews were requested of those individuals

identified (by the Survey) as having major responsibility for initiating and maintaining college/industry relationships. Questions posed during the interview were designed to determine the major factors necessary for strong college/industry relationships and were used to validate the data from the survey. These questions included questions concerning the organization and establishment of the college/business relationships, the leadership styles and problem-solving approaches exhibited by organizational leaders, and the details concerning operation of the centers or departments responsible for the agreements. Attempts were made to determine college administrators' perceptions of what factors contribute to the success of each of the college's interactions with local industry (See Appendix E). Much of the data collected corraborated the literature. The results of these interviews are presented as profiles in Chapter 4 of this study.

# CHAPTER IV

# RESEARCH FINDINGS

## Introduction

An analysis of the data gathered from the survey and from six interviews with community college administrators is found in this chapter. The two categories are treated both separately and as part of a composite from which general conclusions about the status of college/industry relationships in North Carolina can be drawn.

In the first section of this chapter is a presentation of the response rate to the Survey of College/Industry Relationships and demographic information on school size (by F.T.E.), geographic regions, and population density of the local areas. Each of these factors is discussed as it relates to college/industry relationships. Observations are also made concerning the economic impact of colleges' industrial training efforts.

The second section of this chapter presents the findings of the survey items and analyzes this data in relation to the research questions. Tables and graphs are used in the presentation of the data, along with appropriate descriptions.

The third section, based on in-depth interviews presents information on six schools' interactions with local industries as perceived by the administrators interviewed. These six schools

represent five of the six geographic regions of the state and were chosen as having especially active and effective relationships with local industries.

The final section of this chapter, based on all collected data, interprets the current status of college/industry relationships in the North Carolina Community College System.

Response Rate

A total of 54 responses were received from the 58 deans to whom the Survey of College/Industry Relationships was mailed, giving a response rate of 93%. Of the surveys returned, 34 included responses to the open-ended questions on the types of problems the colleges face in attempting to work with industry and the ways to improve college/industry relationships.

While a 100% return rate was hoped for, it was decided before the study began that a 75% return rate was acceptable and would be representative of the community college system in North Carolina. Determining an adequate response rate is, at best, a subjective process. Babbie (1973) had this to say about the matter " . . . a response rate of at least fifty percent is adequate for analysis and reporting. A response rate of at least sixty percent is good. A response of seventy percent or more is very good" (Babbie 165).

The rate of response for this survey compares quite favorably with those reported for other surveys of this nature. Learn (1983) reported 63% response rate on his survey of business and industry linkages with the Pennsylvania community and junior

college. Similarly, Williamson (1981) reported a 70% response rate on her study in the South Carolina Community College System. Day (1988) reported a response rate of 75% in his survey of business/industry programs provided by colleges (Day 1). Responses to the Survey of College/Industry Relationships were received from schools in all six geographic regions, in all six population density regions, and in five of the six school-size categories. The number for each of these categories is given in Table 1, Table 2, and Table 3.

TABLE 1

STATE GEOGRAPHIC REGIONS

| | | |
|---|---|---|
| Region | 1 | Western |
| | 2 | Mid-Western |
| | 3 | North Central |
| | 4 | South Central |
| | 5 | South Eastern |
| | 6 | North Eastern |

TABLE 2

STATE POPULATION DENSITY CATEGORIES (F.T.E.)

| | | | | | |
|---|---|---|---|---|---|
| Category | 1 | 0 | - | 50 | people per square mile |
| | 2 | 51 | - | 75 | people per square mile |
| | 3 | 76 | - | 100 | people per square mile |
| | 4 | 101 | - | 150 | people per square mile |
| | 5 | 151 | - | 200 | people per square mile |
| | 6 | > | - | 200 | people per square mile |

TABLE 3

1987-1988 STATE ENROLLMENT CATEGORIES (F.T.E.)

| | | | | |
|---|---|---|---|---|
| Category | 1 | 100 | - | 1000 |
| | 2 | 1001 | - | 2000 |
| | 3 | 2001 | - | 3000 |
| | 4 | 3001 | - | 4000 |
| | 5 | 4001 | - | 5000 |
| | 6 | > | - | 5001 |

Demographic Data

At least 93% of the schools responding have an annual F.T.E. of less than 3,000. Of those schools which have a service area with a population density of less than 50 people per square mile, all except one have an annual F.T.E. of less than 1000. The one exception, Beaufort Community College, has a service area which includes several counties. The six schools with the largest enrollments are all in areas with a population density of greater than 200 people per square mile. Population density cannot be said to be the sole reason for lower F.T.E., but it may very well be a contributing factor to lower enrollment.

Similarly, of the ten schools which reported having five or fewer of the nine types of college/industry relationships on the Survey of College/Industry Relationships, seven schools (70%) have an F.T.E. of less than 1200, and five of those seven schools, are in a population area with a density of less than 50 p/sq. mile. Two (20%) of the schools reporting five or fewer types of college/industry relationships are in a population area with a density of greater than 200 p/sq. mile and have an annual F.T.E. of greater than 2500. The remaining three schools (30%) are in an

area with a population density of 51-150 p/sq. mile and have an average annual F.T.E. of 1244 (Range 1166-1371).

Of the eleven (responding) with less than 1000 F.T.E., five (45%) indicated their schools have five or fewer types of relationships with local industries. Within the range of schools researched, there is a trend which indicates that school size does have an effect on the number of college/industry programs being offered, with larger schools allocating more positions and money for supporting college/industry relationships. Geographic region, however, appeared to have no relationship to the types, extensiveness or effectiveness of college/industry relationships.

Table 4 presents the reported types of college/industry relationships in the North Carolina Community College System. It should be noted that there is some discrepancy between the reported data on JTPA and information available through DCC on federal money allocated to the institutions.

Eleven of the schools reporting no JTPA cooperation with local industry were allocated federal money in 1987-88 for JTPA. In addition, fourteen schools which reported having JTPA cooperation with local industries did not have federal money allocated to them for that purpose. One possible explanation for the first situation is that the data available from DCC were for 1987-88 while the Survey was sent out in the 1988-89 year; therefore, JTPA funds may not have been allocated at the time of the survey. In the second situation, many schools pursue job placement activities for their students without any federal assistance.

# TABLE 4

## REPORTED COLLEGE RELATIONSHIPS WITH INDUSTRY

| | Geo Reg | Pop Ind | Adv Com | JT PA | Ret Ind | Fnd Inv | New Ind | Occ Ext | Sm B C | FIT Cen | I Rep |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALAMANCE CC | 3 | 6 | X | X | X | X | X | X | X | | |
| ANSON CC | 4 | 3 | X | X | X | X | X | X | X | | X |
| ASHE.-BUNCOMBE TCC | 1 | 5 | X | X | X | X | X | X | X | X | X |
| BEAUFORT CO. CC | 6 | 1 | X | | X | X | X | X | X | | |
| BLADEN CC | 5 | 1 | | X | | | X | X | | | X |
| BLUE RIDGE CC | 1 | 4 | X | X | X | X | X | X | X | | X |
| BRUNSWICK CC | 5 | 2 | X | X | X | X | X | X | X | | X |
| CALDWELL CC | 2 | 4 | X | X | X | X | X | X | X | X | X |
| CAPE FEAR CC | 5 | 4 | X | X | X | | X | X | X | | X |
| CARTERET CC | 5 | 3 | X | | | | | | | | |
| CATAWBA VALLEY CC | 2 | 6 | X | | X | X | X | X | X | X | X |
| CENTRAL CAROLINA CC | 4 | 3 | X | | X | X | X | X | X | X | X |
| CLEVELAND CC | 1 | 5 | X | | | | X | X | X | X | X |
| COASTAL CAROLINA CC | 5 | 5 | X | X | X | X | X | X | X | X | X |
| COLLEGE OF ALBEMARLE | 6 | 2 | X | | | X | | X | X | | X |
| CRAVEN CC | 5 | 4 | X | X | | X | X | X | X | | |
| DAVIDSON CO. CC | 3 | 5 | X | X | X | X | X | X | X | X | X |
| DURHAM TCC | 3 | 6 | X | | | X | X | | X | | |
| EDGECOMBE CC | 6 | 4 | X | X | X | X | X | X | X | | |
| FAYETTEVILLE TCC | 3 | 6 | X | X | X | X | X | X | | X | X |
| FORSYTHE TCC | 3 | 6 | X | X | X | X | X | X | X | X | X |
| GASTON COLLEGE | 1 | 6 | X | | X | X | X | X | X | X | X |
| HALIFAX CC | 6 | 1 | X | X | X | X | X | X | X | X | X |
| HAYWOOD CC | 1 | 3 | X | X | | X | X | X | X | | X |
| ISOTHERMAL CC | 1 | 3 | X | X | X | X | X | X | X | | X |
| JAMES SPRUNT CC | 5 | 2 | X | X | X | X | X | X | X | | X |
| JOHNSTON CC | 4 | 3 | X | | X | X | X | X | X | | X |
| LENOIR CC | 5 | 3 | X | | X | X | X | X | X | X | |
| MARTIN CC | 6 | 1 | X | X | X | X | X | X | | | X |
| MAYLAND CC | 2 | 2 | X | | | X | X | X | X | | X |
| MCDOWELL TCC | 1 | 3 | X | X | X | X | X | X | X | | X |
| MITCHELL CC | 2 | 5 | X | X | X | X | X | X | X | X | |
| MONTGOMERY CC | 4 | 1 | X | | X | | | X | | | X |
| NASH CC | 6 | 4 | X | | | | X | X | X | | X |
| PAMLICO CC | 5 | 1 | X | | X | X | | X | | | |
| PIEDMONT CC | 3 | 2 | X | X | X | X | X | X | X | X | |
| PITT CC | 6 | 5 | X | X | X | X | X | X | X | X | X |
| RANDOLPH CC | 4 | 4 | X | X | X | X | X | X | X | X | X |
| RICHMOND CC | 4 | 4 | X | X | X | X | X | X | X | | X |
| ROANOKE-CHOWAN CC | 6 | 1 | X | | X | | X | X | X | | |
| ROBESON CC | 4 | 4 | X | X | X | X | X | X | X | | X |
| ROCKINGHAM CC | 3 | 5 | X | X | X | X | | X | X | | X |
| ROWAN-CABARRUS CC | 2 | 6 | X | X | X | | X | X | | | X |
| SAMPSON CC | 5 | 2 | X | | X | X | X | X | | | |
| SOUTHEASTERN CC | 5 | 2 | X | X | X | X | X | X | X | | X |
| SOUTHWESTERN CC | 1 | 1 | X | X | X | X | X | X | X | | |
| SURRY CC | 2 | 4 | X | X | X | X | X | X | X | X | X |
| TRI-COUNTY CC | 1 | 1 | X | | | | X | | | | |
| VANCE-GRANVILLE CC | 3 | 2 | X | X | X | X | X | X | X | | X |
| WAYNE CC | 5 | 5 | X | X | X | X | X | X | X | | X |
| WESTERN PIEDMONT CC | 2 | 5 | X | X | X | X | X | X | X | X | X |
| WILKES CC | 2 | 2 | X | X | X | X | X | X | X | X | X |
| WILSON CO. TC | 6 | 5 | X | | X | X | X | X | X | | X |
| UNSIGNED | | | X | X | X | X | X | X | X | X | |

Economic Development

One of the goals of the North Carolina Community College System is to promote the economic development of the regions it serves.

> Educational and training programs are designed to enhance the personal, social, and economic potential of the individual and to produce measurable benefits to the state and the community college offers occupational training and upgrading programs and services for businesses, industries, and agencies. (A Mission Statement for the North Carolina Community College System 1987 1).

Because this statement is included as a part of the state system's mission statement, it was expected that there would be many available measures of the relationship between community colleges' programs and regional economic development and growth. This information was not readily available and the economic data that could be collected were not in a form conducive to analysis and interpretation.

Economic development encompasses a broad spectrum of organizations and includes the concept of recruitment for commercial manufacturing firms which invest at "least $1 million in industrial activity, create at least 50 new jobs, or result in at least 20,000 square feet of new floor area" (Asheville Citizen 2B).

Enrollment data available from the Department of Community Colleges indicate that during the 1987-88 academic year, these numbers of F.T.E.'s were earned in the following categories:

| | |
|---|---|
| Occupational Extension (May include but is not limited to industry courses) | 17,062 |
| New and Expanding Industries | 1,993 |
| Human Resource Development | 587 |
| Total (1987-88) | 19,642 |

Further, the following federal allocations were made to the North Carolina Community College System in 1986-1987, a portion of which may have been spent for the support of industry courses and related activities:

| | |
|---|---|
| Adult Basic Education | 2,346.099 |
| Vocational Education | 8,830.048 |
| JTPA | 1,286,315 |
| Human Resources Development | 3,555,914 |
| Total | $16,018,376 |

A recent article in the Asheville Citizen (4 March 1989) listed North Carolina as first in the nation in attracting new manufacturing firms and cited "the state's educational system, including technical training in the community colleges, well-trained workforce, transportation system and available land" as reasons companies chose to locate in our state.

While the enrollment data and monetary allocations may be indicative of a healthy positive relationship between community colleges and their constituents, these factors have not yet been shown to be directly measurable elements of economic growth.

It appears, then, that we have not yet reached a point where the enrollments of community colleges or the profits of corpora-

tions have been tied to direct collaborative planning and action. Nor have we reached a point where the benefits and cost of collaborative planning and action have been clearly stated, placed in proportion to the overall mission of the two sectors and used to develop a comprehensive consensus on the role and responsibility of educational institutions on regional economic development.

Findings Regarding Research Questions

*Research Question # 1: What are the different types of college/industry relationships in existence in the North Carolina Community College System?*

The number of formal relationships reported by each of the 54 institutions responding to the survey is shown in Table 4. The average number of different relationships reported by the colleges was 7.2 with a range of 1-12. The most frequently reported college/industry programs were advisory committees, occupational extension classes, and New and Expanding Industry Training programs. The occupational extension classes are fairly traditional community college programs while advisory committee and New and Expanding Industries programs have only recently been emphasized as priorities in the N.C.C.C.S.

TABLE 5

FREQUENCY OF OCCURRENCE OF COLLEGE/INDUSTRY RELATIONSHIPS

| Type of Relationship | Number of institutions | % of total institutions |
|---|---|---|
| *Advisory Committee* | 53 | 98 |
| JTPA | 36 | 66 |
| Return to Industry | 43 | 79 |
| Foundation Involvement | 45 | 83 |
| *New and Expanding Industry Training* | 49 | 90 |
| *Occupational Extension Classes* | 51 | 94 |
| Small Business Center Assistance | 45 | 83 |
| F.I.T. Center | 20 | 37 |
| Representation on Board | 41 | 75 |
| Other: Curriculum Courses | 2 | 3 |
| Industry Council | 2 | 3 |
| Chamber of Commerce Membership | 1 | 1 |
| Personnel Association | 1 | 1 |

Table 5 gives a more succint presentation of the data drawn from question 1 of the Survey. The three most frequently reported relationships are italicized.

*Research Question # 2: From college administrators' viewpoints, how extensive and effective are existing college/industry relationships?*

A Likert-type scale was used on the survey to gauge administrators' assessment of their college's relationships with local industries. The scale ranged from strong (+2) to weak (-2) on each of eight different types of college/industry relationships. The results can be seen in Table 6 and Table 7.

TABLE 6

EXTENSIVENESS OF COLLEGE/INDUSTRY RELATIONSHIPS

| Institutions (N=54) No. | % | Relationship | Strong +2 | +1 | 0 | -1 | Weak -2 | Mean |
|---|---|---|---|---|---|---|---|---|
| 52 | 96 | Advisory Committee | 20 | 23 | 6 | 3 | 0 | 1.13 |
| 37 | 70 | JTPA | 9 | 17 | 7 | 2 | 2 | .89 |
| 41 | 76 | Return to Industry | 11 | 21 | 5 | 2 | 2 | .90 |
| 46 | 85 | Foundation Involvement | 16 | 18 | 8 | 0 | 4 | .91 |
| 51 | 94 | New and Exp. Industry | 30 | 15 | 4 | 1 | 1 | 1.41 |
| 45 | 83 | SBC Assistance | 26 | 17 | 1 | 0 | 1 | 1.49 |
| 17 | 31 | FIT Center | 13 | 3 | 0 | 0 | 1 | 1.59 |
| 40 | 74 | Rep. on Board | 18 | 19 | 2 | 1 | 0 | 1.35 |
| | | | | | Combined Mean = | | | 1.21 |

In analyzing the data, a matrix worksheet was completed, recording each college's assessment of the extensiveness and effectiveness of their college's relationships with industry. Information on the extent to which colleges cooperate with local industry has been condensed from the worksheet and is presented in Table 6.

It appears from the Survey that when community colleges in the N.C. Community College System use advisory committees and representation of industrialists on their Boards, these are used extensively, with ratings of 1.13 and 1.35 on a 2.0 scale. In addition, the colleges use F.I.T. Centers, New and Expanding Industry Training and Small Business Center assistance more extensively than other types of relationships, with ratings of 1.59, 1.41, and 1.49 respectively, all on a possible +2.0 scale.

TABLE 7

EFFECTIVENESS OF COLLEGE/INDUSTRY RELATIONSHIPS

| Institutions (N=54) No. | % | RELATIONSHIP | Strong +2 | +1 | 0 | -1 | Weak -2 | Mean |
|---|---|---|---|---|---|---|---|---|
| 53 | 98 | Advisory Comm. | 19 | 21 | 11 | 2 | 0 | 1.08 |
| 37 | 69 | JTPA | 7 | 21 | 5 | 2 | 2 | .73 |
| 41 | 76 | Return to Industry | 14 | 21 | 5 | 0 | 1 | 1.15 |
| 45 | 83 | Foundation Involvement | 18 | 15 | 8 | 1 | 3 | .98 |
| 51 | 93 | New and Exp. Industry | 23 | 19 | 2 | 0 | 1 | 1.41 |
| 45 | 83 | SBC Assistance | 23 | 19 | 2 | 0 | 1 | 1.40 |
| 17 | 31 | F.I.T. Center | 12 | 4 | 0 | 0 | 1 | 1.53 |
| 40 | 74 | Rep. on Board | 18 | 15 | 6 | 1 | 0 | 1.25 |
| | | | | | Combined Mean = | | | 1.19 |

Information on the effectiveness of the North Carolina Colleges' relationship with local industries has been extrapolated from the matrix worksheet and is presented in Table 7. College administrators rated F.I.T. Centers, New and Expanding Industry Training, Small Business Center Assistance, and Representation of Industrialists on the Board of Trustees as being the most effective types of college/industry relationships. These relationships were rated 1.53, 1.41, 1.40, and 1.25 respectively, all on a possible +2.0 scale. It should be noted that F.I.T. centers are located at only twenty (37%) of the schools responding, while advisory committees exist at 98% of the schools and showed an extensiveness and effectiveness rating of 1.13 and 1.04 respectively. Based on the table, the combined *extensiveness* mean of all relationships (1.21) was slightly higher than the combined *effectiveness* mean (1.19).

TABLE 8

COLLEGES RATED ≥ 1.5 EXTENSIVENESS / EFFECTIVENESS

| | Rating | # of types relationship | full time | part time | % of budget | # of ind.rel. |
|---|---|---|---|---|---|---|
| *Asheville-Buncombe TCC | 1.5 | 9 | 3 | 10 | 7 | 75 |
| Alamance | 1.5 | 7 | 2 | 10 | 7 | 50 |
| *Catawba Valley TCC | 1.57 | 7 | 10 | 2 | 11-15 | 20 |
| Central Carolina | 1.57 | 7 | 2 | 4 | 1.5 | NA |
| *Coastal Carolina | 2.0 | 8 | 10 | 15 | 11-15 | 100 |
| Durham | 1.5 | 4 | 2 | 4 | ? | 10 |
| *Fayetteville | 2.0 | 7 | 3 | 10 | 1-5 | 22 |
| *Gaston | 1.79 | 7 | 5 | 15 | ? | 25 |
| Nash | 2.0 | 4 | 2 | 5 | ? | NA |
| Piedmont | 1.64 | 7 | 8 | 0 | ? | 20 |
| Randolph | 1.69 | 8 | 1 | 10 | 1-5 | 6 |
| Rowan | 1.5 | 5 | 2 | 8 | ? | 15 |
| Southeastern | 1.64 | 7 | NA | NA | 1-5 | 12 |
| *Wayne Comm. College | 1.78 | 7 | 2 | 10 | ? | 100 |
| | | | | | Mean = | 37.92 |

*These Colleges selected for in-depth interviews

In addition to presenting the data on extensiveness and effectiveness separately, a combined score was derived by computing the average of the scores on each of the eight categories of college/industry relationships.

All of the fourteen schools with combined extensiveness-effectiveness ratings of +1.5 or greater (Table 8) have annual F.T.E.'s of more than 1000, with 92% having 1325 or more. Of the eleven schools with ratings of +1.5 and reporting seven or more types of college/industry relationships, the average number of full-time and part-time personnel involved in administering college/industry relationships was 4.6 and 8.6 respectively, with one school not reporting that data. Additionally, these fourteen

schools reported having an average of 37.92 working relationships with area industries, with two schools not reporting data on this item. These data are presented in Table 8. Selection of the six schools for in-depth interviews was made on the basis of (a) at least a +1.5 rating and (b) geographic representation, and (c) the willingness of college administrators to participate in in-depth interviews.

*Research Questions # 3: What person(s) within the college has/have responsibility for initiating and maintaining college/industry relationships>*

Responses to this question yielded a variety of data. Most schools indicated that more than one person was responsible for each of the types of relationships with only a few categories having a clear consensus on the person responsible. Responsibility for initiating and managing advisory committees is shared by Deans of Academics (26%), Faculty (18%), President (18%), Dean of Continuing Education or Careers (17%), Directors (16%), Department Chairpersons (4%) and others (3%). The nature and purpose of the advisory committee work is the primary factor used to determine who is responsible for initiating and maintaining the advisory committee's work. That the Dean of Academics and the Faculty have such a large responsibility for the advisory committees may indicate that advisory committees are used extensively in curriculum matters.

The assignment of responsibility to manage JTPA activities varied widely in the community college system. Of the schools

responding, 29% gave responsibility to the Dean of Continuing Education; 29% to Directors; 16% to President or Vice-President; 7% to Dean or Vice-President of Student Services; 5% to Faculty, 7% to Dean of Academics. Several schools noted that the directors responsible for JTPA were given the specific title of JTPA Director or Directors of Job Placement.

Return to Industry activities appear to be the responsibility of the Academic division, with the Deans, Directors, and Faculty together taking responsibility in 71% of the cases. Others who share in this responsibility include Staff Development Coordinators, 6%; Presidents, 13%; (it was not reported whether these were full-time administrators or faculty with that assignment); and Deans of Continuing Education, 5%. The incentives provided by the State Department of Community Colleges should make this one of the most widely used college/industry interactions, yet only 79% of the schools reported taking advantage of the state-allocated staff development funds available for return-to-industry training for the faculty.

Presidents and Vice-Presidents play a major role in managing foundation activities, with the responding schools giving them responsibility 62% of the time. Others who share this responsibility are Directors or Deans of Development (and/or Planning), 33%; Deans of Academics 4%; and Dean of Student Services, 2%. Foundation activities may be one of those functions perceived as being the domain of C.E.O.'s both within the

community college and within the industrial settings.

The Deans of Continuing Education (52%) and their Directors (30%) take primary responsibility for setting up and managing New and Expanding Industry training, according to responses to the Survey. Others who may be involved in this activity are Presidents, 6%; Deans of Academics, the College, or College Services (11%); and Industry Coordinators (2%).

Occupational extension classes are clearly the responsibility of the Deans and Directors of Continuing Education, with the responses indicating that together these two offices manage this activity 92% of the time. Presidents and other Deans are minimally involved in identifying needs or in following up on requests for occupational extension classes (8%).

Small Business Centers are available on 83% of North Carolina Community Colleges' campuses. Most of the centers are directed by Small Business Center Directors (47%) under the administration of the Dean of Continuing Education (35%). On a few campuses, the Dean of Academics (12%), the President (4%), or Faculty (2%) are involved in the operation of the Small Business Center.

Focused Industry Training (F.I.T.) Centers are available on only 37% of the campuses. Like the Small Business Centers, they are managed and operated by members of the Continuing Education Division, with Directors (often designated as SBC Directors) having responsibility 48% of the time and Deans having responsibility in 41% of the cases.

Finally, it was found that industries' requests for training were likely to receive attention and follow-up by a variety of community college personnel. Deans of Continuing Education were shown to be involved in 40% of the follow-up activities; Directors, 30%; Deans of Academic, 14%; Presidents, 10%; Faculty, 3%; and Department Chairperson and Dean of College Services, each 1%. It appears that those who are involved as the initial contacts for the requests are also likely to participate in the planning and follow-up activities. The specific responsibility responses reported for each category of college/industry relationships are shown in Table 9.

TABLE 9

ADMINISTRATORS RESPONSIBLE FOR MANAGING COLLEGE/INDUSTRIAL RELATIONSHIPS

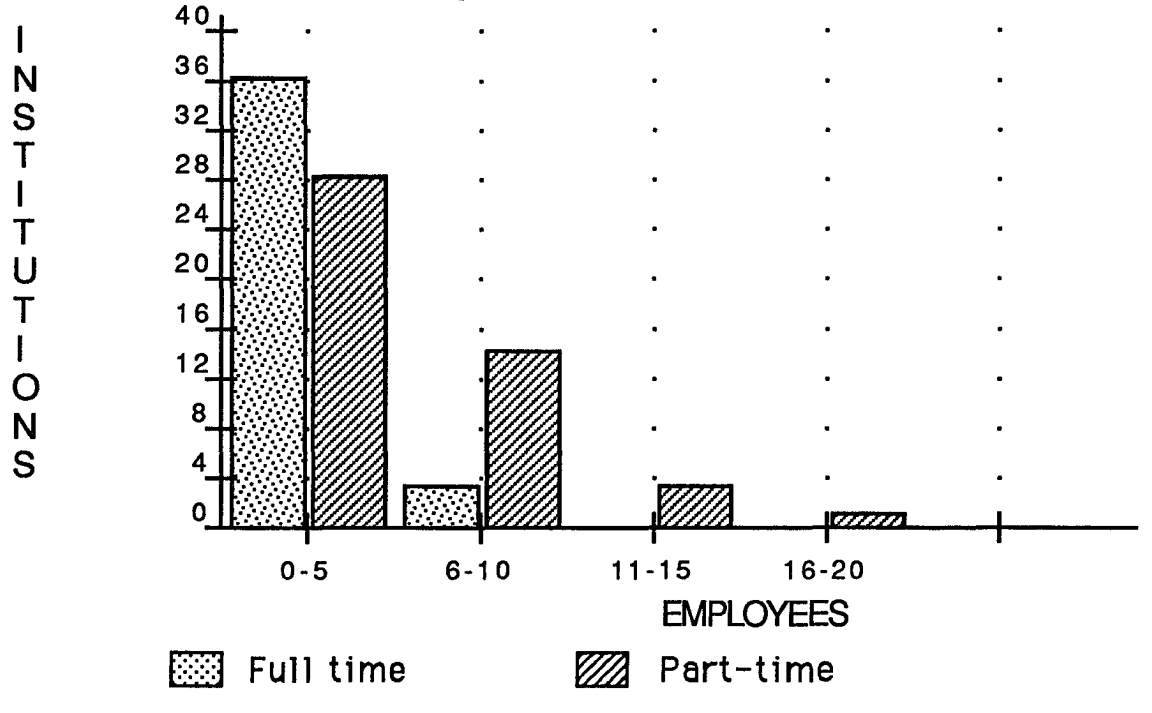
*What person from the college has responsibility for initiating and maintaining these college/industrial relationships?*

| Relationship With | Pres. or V.Pres | Dean Acad. | Dean C.Ed. | Director | Faculty | Others (Specify) |
|---|---|---|---|---|---|---|
| Advisory Committees | 19 | 28 | 18 | 17 | 19 | Department Chair 4<br>Dean-College 4<br>Inst. Dev't. Officer 1 |
| JTPA Agreements | 9 | 4 | 16 | 16 | 3 | D/VP Students 4<br>HRD Dean 2<br>Evening Director 1 |
| Return to Industry | 8 | 26 | 3 | 10 | 8 | Coor. Staff Dev't. 4<br>Departnent Chair 1<br>Dean-College 1<br>Dean-Voc. Education 1 |
| Foundation Involvement | 32 | 2 | 0 | 6 | 0 | Dean/Director Dev't. 11<br>Dean-Student Services 1 |
| New and Expanding Industry Training | 3 | 4 | 28 | 16 | 0 | Dean-College/Services 2<br>Coord. Ind. Services 2 |
| Occupational Extension Courses | 2 | 1 | 41 | 14 | 0 | Dean-College/Services 2 |
| Small Business Center Assistance | 2 | 7 | 20 | 27 | 1 | |
| F.I.T. Center | 0 | 7 | 12 | 14 | 1 | Department Chair 4 |

*Research Question # 4: How many people and what percentage of the administrative budget does each college allocate to support college/industry relationships?*

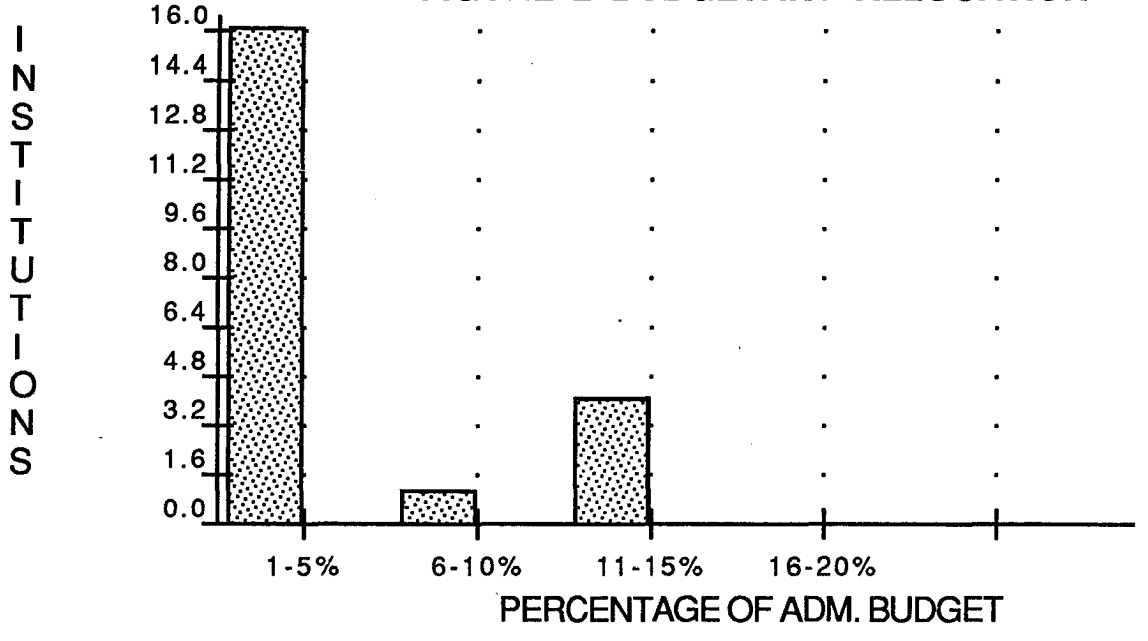
It was expected that most colleges would have a clear understanding of their commitment to serving industry. Responses to questions about the number of full-time and part-time personnel and the percentage of the administrative budget allocated to initiating and maintaining college/industry relationships and activities brought some surprising answers.

**FIGURE 1 PERSONNEL ALLOCATION**




Twelve of the fifty-four respondents indicated their schools had no person with full-time responsibility for working with industry, and five indicated they had no part-time persons assigned to working with industry. The average number of full-time and part-time employees with responsibility for working with industry was 5.31 (Range 0-40).

**FIGURE 2 BUDGETARY ALLOCATION**




Over 52% of the administrators responding indicated they did not know how much of the college's administrative budget was used for serving industry. Of the twenty-two administrators who did report on this item, 16 (73%) indicated their schools spent 1-5% of the administrative budget on this activity; 1(5%) reported spending 6-10%; 4 (18%) reported spending 11-15%; and 1 (5%) reported spending .5% of the administrative budget on college/industry activities. This information is shown in Figures 1 and 2.

*Research Question # 5: Are planning and evaluation of college/industry programs carried out?*

When asked if administrators meet on a regular basis to plan, discuss, and/or evaluate college/industry programs, 67% (36) indicated that they do. Of that number, 31% (11 administrators) reported they meet on a monthly basis; 19% (7) meet on a

twice-monthly basis; and 14% in each category reported they meet on a weekly, quarterly, or as-needed basis to plan, discuss, and/or evaluate college/industry programs. Thirty percent (16 administrators) reported that personnel at their schools do not meet regularly to plan, discuss, and/or discuss college/industry programs. A variety of explanations were offered: meet on an as-needed basis (5); not regularly scheduled but periodic meetings are held (4); little industry in our area - doesn't warrant much planning, discussion, or evaluation (2); this is part of annual planning process (1); and this is the responsibility of the Dean of Continuing Education (1).

*Question # 6: Will changes in procedures (protocol) and mission be necessary for North Carolina's community colleges to work more closely with industry?*

The Survey included a question on whether the colleges' mission statements contained statements directed at fulfilling local industries' needs. The responses indicated that 96% (52 schools) of the colleges did include this as a part of their mission and only 4% (2 schools) were unsure about the inclusion of meeting industries' needs in their mission statements.

Opinions were mixed on the question of changes in protocol or procedures and the reassignment of responsibility for working with industry. Nearly half of the responses indicated that no changes were needed (48%) and that responsibility was properly assigned and procedures already in place were appropriate. Another small percentage felt that changes were needed, but not in

centralizing or decentralizing the responsibility (12%). From these respondents, no suggestions were made as to what changes were desirable. Still other administrators (43%) reported that changes were needed, and 50% of all responses indicated that a centralized organization was preferable to a decentralized organization in working with industries. Only 5% of the respondents indicated that a decentralized organization was best.

Presently, many of the industry-related activities are shared by administrators in the Continuing Education Departments. The survey results (responses to Questions 10 and 12) indicate that closer coordination and communication about planning and conducting industry-related activities can help achieve the centralization some colleges desire.

*Question # 7: What types of problems do colleges face in attempting to work with industry?*

There are a variety of factors which impede more extensive college/industry relationships. Among the reasons given by respondents to the Survey, budgeting constraints (40 responses) and personnel shortages (37 responses) were given most often. Of course, these two factors overlap; the lack of adequate financial resources results in assignment of tasks to the personnel already on the payroll. As new tasks or priorities are added to the colleges' agendas, an expanded budget is necessary to ensure adequate operation. Other problems encountered by colleges as they attempt to work with industry include lack of industrial knowledge (12 responses), differences in protocol (7 responses),

differences in management style (6 responses), lack of equipment (5 responses), scarcity of industry in service area (2 responses). The following reasons were mentioned by single responses: political differences, rigidity in DCC regulations, lack of available space, communication of needs, coordinating training for small groups, and profit as the factor determining whether training is offered.

The final open-ended question allowed respondents to give suggestions for improving college/industry relationships. Several of the suggestions appeared to be in response to the problems that were identified in Question 10. The following is a partial list of the suggestions offered. These will be included in the proposed framework in Chapter 5 of this study.

Subsidize more positions for industry service. (8 responses)

Promote better coordination/communication. (7 responses)

Increase program funding. (4 responses)

Promote better research of industry's needs. (4 responses)

Place industry's needs higher on state board's agenda for action. (3 responses)

Improve planning and evaluation procedures.

Expand cooperative education.

Place more emphasis on quality programs and training.

Organize colleges' industry programs.

Place working with industry higher on college's agenda.

Promote (marketing) of colleges' assets and programs.

Six Profiles

*Asheville-Buncombe Technical Community College*

"We can do it, and we will do it," are the catch-phrases of Asheville-Buncombe Technical Community College's college/industry efforts says Dr. Lowell Smith, Dean of Continuing Education at A-BTCC. Putting service to industry high on the college's agenda is a key factor, reported Smith. Both Smith and the College's president, Harvey Haynes, have industrial backgrounds and both Smith and Haynes have earned the right to be known as resident experts on college/industry programs. Being responsive to area industries' requests for training is indeed a strong component of the College's mission.

When a request for training is made, it comes to Smith's office. Often he handles the request personally, preferring a face-to-face meeting with the industry representative, at the industrial site. If he knows ahead of time what the request is to be, he will take along the potential instructor (Smith recommends this approach of getting the instructor involved early in the process). As soon as the types of training have been identified, Smith and one, two, or three instructors meet to design the course and select a text. At this point, Smith passes the process over to the instructor, relying on his/her professional ability to carry through and deliver the needed instruction, while he (Smith) becomes the supporter and facilitator.

There is a sense of personal attention to detail from the time the request is made until the final evaluations are

completed. At Asheville-Buncombe Technical Community College, there is a "can do" "will do" attitude by people who understand industrial protocol, know what questions to ask, and commit the College's resources to delivering what is promised. This steady, consistent philosophy has proven successful for them and may be a model for others to follow.

*Catawba Valley Community College*

Coy Hudson, Dean of Instruction at Catawba Valley Community College (CVCC) credits his school's success in working with business and industry to the "sundown rule," responding to every request before the office closes for the day. This approach reflects a commitment to making working with industry a priority from the top down.

CVCC organizes its instructional activities under one office, with Dr. Hudson responsible for continuing education, curriculum, and learning lab administration. He serves as a key contact and representative of the college on several civic committees, as well as the Chamber of Commerce. Much of the follow-up work, including the design and delivery of services, is delegated to chairpersons in the Business, Furniture, and Engineering Technology Divisions. These chairpersons have, in addition to academic preparation, strong industrial or business experience. The chairpersons teach only 3-6 hours per quarter, thereby allowing administrative time to dedicate to making new contacts and following up on requests from industry for upgrading training.

One key to the success of CVCC's College/Industry interactions is their innovative spirit. Theirs was one of the first F.I.T. Centers in the North Carolina Community College System. Dr. Hudson states that the flexibility of being able to offer specialized classes to small groups has done much to establish the college's reputation of responsiveness and quality. The newly funded Small Business Center also promises to allow CVCC to expand the services offered to Catawba and surrounding counties. (CVCC has provided small business assistance service without state funds until this year.) Another component of their industry program is the Management Institute for supervision and management training. Using the McGraw-Hill series as a basis for instruction, these institutes are offered to area industries' supervisors and managers as an alternative strategy for managing their businesses. Another pro-active program at CVCC is the Quality and Productivity Center concept being integrated into CVCC's own management approach and soon to be offered to area industries. The concept is an extension and refinement of Demming's "quality circle." It includes motivation principles, along with adult learning theories and an advocacy for life-long learning.

These innovative approaches, coupled with the strong administrative support and commitment to being responsive to area industry, cause one to think that CVCC may be changing the way Catawba County is doing business!

*Coastal Carolina Community College*

Involving full-time curriculum faculty in the college/-industry programs is at the heart of Coastal Carolina Community College's success in serving industry, according to Dr. Walter Timm, Dean of Instruction at CCCC. The administration at Coastal Carolina sees the faculty as the College's greatest resource--professional, well-qualified, competent, dedicated, and loyal. When this component is sent out to serve industry, says Timm, you have a recipe for success.

Many of the area industries' initial requests for training come through the F.I.T. Center or the New and Expanding Industries program. Coastal Carolina gives the industries just enough to get them started, to get employees to a point where they can operate the machinery. From day one, however, the instructors are selling the curriculum and credit programs the college can offer. By the end of the first training program, the students are sold on Coastal Carolina and the possibilities that further education can offer them.

According to Timm, a college does not have to have a F.I.T. Center in order to serve industry. But it does need a strong faculty committed to talking to and visiting area employers, making personal contacts, building professional relationships. Once you have sold the faculty on this concept, just stand back, let them have their heads, and the College reaps the benefits. Handling the industry programs in curriculum, using full-time faculty, ensures quality and integrity and is an investment which quickly pays for itself, reports Timm.

This philosophy, which delegates responsibility and authority to the "resident experts" reflects an administrative respect for and support of the individuals who carry out the daily work and mission of the college. And so it should always be!

*Fayetteville Community College*

Fayetteville Community College credits much of the success of their college/industry programs to using a strong industry advisory group and a small team approach to handling requests.

According to Harold Thompson, Director of Special Programs and Projects, an advisory group of nine or ten representatives from various area industries, assists Fayetteville CC in identifying the area "training needs and designing the programs to meet those needs." In turn, the College recognizes the important contributions made by this group by playing host to them at luncheons and "Industry Day" activities. The "industry services team" is made up of a Dean and a Director of Continuing Education (who serves as the major college contact for industry) and an Industrial Management instructor. When the request comes in, this team meets to decide whether the training fits best under curriculum or continuing education. Then one of the team is assigned responsibility to administer the project until its completion.

There is good rapport between the continuing education and the curriculum division, with the interest of the College as the major focus. This reduces territoriality and/or personality conflicts in deciding who does the training. Curriculum instructors

are often asked to teach continuing education classes either as part of a regular assignment or as an over-load with extra pay. Again, there seems to be little friction on this point.

The spirit of teamwork, cooperation, and putting the interests of the College first appears to be a big factor in Fayetteville Community College's successful college/industry programs.

*Gaston College*

"What is special about the way you manage college/industry relationships and programs here at Gaston College?" the researcher asked. The answer was as observable as it was audible when the researcher was ushered in to the office of Roland Ball, the Dean of Trade and Industrial Programs, where she was made to feel as if she were his only appointment for the day. A quick glance at his calendar would have dispelled that notion; nevertheless, the interview proceeded at a relaxed, informal pace. It was that very sense of informal protocol which set others at ease that may be the secret to Gaston's success in working with business and industry. But there's also a process behind the protocol.

Gaston involves most of the administrative staff in college/industry relationships, reporting that five directors work full-time in administering business/college relationships. Additionally, all Vice-Presidents, Deans, Directors, and the President (15 people) are involved on a part-time basis. There is a broad-based commitment to and support for working with area industries. The leadership is described as open, flexible, and

supportive. Problem-solving is a group effort; problems are the domain of the college, not of individuals alone. Risk-taking is allowed and often openly encouraged and rewarded, yet individuality is also allowed. Communication is open, and frequent, informal and multi-dimensional. The Dean reported that he, as well as the businessmen and with whom he deals, prefers personal contacts, visits rather than calls or memos.

Gaston College's procedures for responding to an industry's request for training are fairly simple:

1. A meeting between college representatives and industry representatives to discuss the general outlines of what is needed. Industry representatives have major input on what is included.
2. A meeting of college personnel to decide (1) what area of the college will handle the course or training and/or (2) whether the college will offer the training, using cost-effectiveness as one guideline.
3. A college representative writes up a proposal for the course(s) or training, based on the initial meeting.
4. A second meeting with industry representatives, at which a presentation of the proposal to the decision-makers is made. This meeting is sometimes held at the college, sometimes in-plant.
5. After details are agreed upon, college personnel follow up, with attention to details of marketing, organizing, operating, and evaluating the training.

Behind the informal atmosphere, there is a well-organized system of dealing seriously and quickly with industry's requests and pulling a team together to ensure that the activities are organized and delivered appropriately.

*Wayne Community College*

Wayne Community College approaches their industry programs through a small team network approach, says Shirley Boyd, Vice President for Instructional Services.

With a high-energy, active, visible Dean of Continuing Education as one of the key contacts through whom requests for training are channeled, the team is composed of representatives from the learning resource center, human development services, curriculum, and cooperative education. Together these personnel decide which department should handle the training and who should be involved. The appropriate administrator then takes responsibility for calling together the team which will actually plan and carry out the training.

Another example of the team approach used by Wayne Community College is the Business Advisory Council, which began at the request of a prominent CEO at one of Wayne County's leading industries. This council is made up of the CEO's from the area's major industries.and the Wayne Community College President. The Dean of Continuing Education also meets with the group on a regular basis. The purpose of the council is to identify and articulate area industrial training needs and advise Wayne Community College on needed curriculum changes. Some added

benefits are increased awareness of activities in both sectors, a stronger, wider support base for Wayne Community College, and a communication network with unlimited possibilities for future collaboration.

A final example of the success of the team approach for Wayne Community College is the small committee which handles the publications and advertising for the College. This committee is made up of the public information officer, job placement and minority rights representative, the cooperative education director, the media services director, the small business coordinator, the Dean of Continuing Education, and the Vice-President of Instructional Services. (The Dean and Vice-President are also on the initial contact team for industry requests which ensures consistent communication.) This committee meets frequently (weekly or more often) to discuss what is happening on- and off-campus. Together this team ensures wide-spread knowledge and understanding of Wayne Community College's involvement with area businesses and industries.

Summary and Conclusions

Regardless of the organizational patterns used by the community colleges in setting up and managing their industry programs, key elements appear to be present in the more successful relationships. From the profiles there is evidence of the need for obtaining strong administrative support, maintaining open and flexible communications, involving well-prepared faculty in the process from beginning to end, paying attention to details, adjusting to industry's protocol, and giving each interaction the personal touch.

The data gathered from the profiles corroborate the findings of the survey in that there are many different approaches being used by the fifty-eight colleges in initiating and managing industry services. While no one organizational pattern is best, those schools which report the more successful programs appear to have set, organized procedures for responding to the requests and specific delineation of responsibility for planning and delivery of services.

In addition to what is already known about college/industry relationships, this study adds to the literature specific information about the current status of college/industry interactions in North Carolina. It also offers a plan for expanding those relationships and managing them effectively through strategic and operational processes.

One of the key elements which appears to be a catalyst in successful college/industry interactions is an active, visible,

positive leader who is capable of handling the public relations aspect of working with area industry representatives. This person must have good communication skills, good organizational skills, be willing to delegate authority, and be eager to share the success of the college's efforts with his/her team.

The synergism, then, of successful college/industry program revolves around a commitment of the college and its personnel to serving industry. Resources are allocated to that end, and those involved in the relationships take the initiative and responsibility of being responsive to industries' requests, planning the programs, delivering the services, evaluating the efforts, and using those results to plan and expand the college's services.

# CHAPTER V

# A PROPOSED FRAMEWORK FOR COLLEGE/INDUSTRY INTERACTIONS

## Introduction

Within the North Carolina Community College System a wide variety of factors influences how effectively and extensively the colleges interact with local industry. The System offers over 240 different technical and vocational curriculum programs, with an annual average of more than 5000 curriculum courses (DCC 1988). To add new curricula to its offerings, each college must justify the need by demonstrating that jobs exist for the potential graduate. In addition, the college must verify that it currently has the resources (financial and human) to support the new curricula or has devised a viable method for obtaining those resources. Curriculum program offerings are thus tied to the needs and support of local business and industry.

Besides the wide range of programs offered across the System, the relative size of the colleges ranges from 166 (Full-time equivalency) to 8856 (1987-1988 enrollment). Funding for each school is determined by each school's F.T.E. enrollment for the previous year. Thereby, it can be surmised that the schools with the largest enrollment earn the largest shares of the funding. Since administrative positions are also funded on the F.T.E. formula, the larger schools, because of larger budgets, are

often able to commit more positions to working with industry. To compensate for a smaller number of administrative positions, some of the smaller schools have organized their administration more flexibly, distributing responsibility for college/industry relationships across several departments. Some schools even make initiating and maintaining college/industry relationships a part of every administrator's job description.

A third factor influencing the extent of the college's interactions with industry is the population density of the counties served by the college. This ranges from 50 people per square mile to more than 200 people per square mile. The population density, along with other demographic factors, determines which and how many industries locate in the state's six geographic regions. The number of employees per industry and the number of industries in the college's service area, therefore, influence the types and extent of the college/industry interactions.

Finally the organizational structure and leadership or management styles of local industries and of colleges have an influence on the extent and effectiveness of the college/industry interactions. There is no one "best" match of college and industry leadership styles, and most schools should be able to adapt their administrative procedures to the routines and expectations of industrialists.

Because of the diversity of the colleges' programs and local needs and industrial make-up, few institutions have developed

and implemented a plan or organized strategies for initiating and managing college/industry relationships. There is little similarity in the approaches that are in existence.

Most college leaders are still attempting to ascertain what the local industries' training needs are and the college's potential for meeting those needs. At best, the approach used most often is a piecemeal hit-or-miss affair. What is needed is an approach which assesses the opportunities and constraints of working more closely with industries to meet their training needs. The approach should include an audit of strengths and weaknesses of the internal environment as a prelude to charting a course of action.

Essential Elements of Successful College/Industry Interactions

Both the review of literature and the data about the current status of college/industry interactions in North Carolina suggest common elements which are necessary for successful relationships. Six of the essential factors are (1) administrative support, (2) an organized approach to managing the process, (3) assignment of responsibility to a full-time person (someone who is energetic, visible, and positive in his/her interactions with the public), (4) a formal protocol or set procedures for arranging training activities, (5) agreements which address the industry's needs and the college's mission, and (6) an evaluation plan.

Support

For the most part, community college administrators endorse the need for and are supportive of expanding

college/industry relationships (Day 1). However, to realize effective cooperative agreements, administrators must also be willing to commit the time and resources to make building these relationships a visible priority for their institutions. This commitment must be communicated to personnel at all levels of the institution. All levels of administration should be a part of the initial decision to establish the program, ensuring collective ownership of the process as an integral part of the college's mission. This early involvement also fosters group problem-solving.

One measure of administrative support may be the allocation of resources, personnel as well as monetary, that the college commits to serving industry needs. The Survey of College/Industry Relationships revealed that most colleges in North Carolina do not know how much of the administrative budget is allocated to working with industry. A majority of the administrators reported having only part-time responsibility for serving industry. Strong administrative support can help create a climate where activities to initiate and extend college/industry relationships are recognized and rewarded as meeting organizational goals.

Organization

From the review of literature, opinion is divided over whether the centralized or decentralized organizational structure is the approach that is most effective for managing college and industry interactions.

Both approaches offer benefits which can lead to stronger college/industry relationships. The centralized organization offers:

1. Central control of information management - everyone gets the same information consistently.
2. Decisions are funneled through one office - the current commitments of resources are known and any modifications are immediately known and understood.
3. One person or office can be assigned responsibility and held accountable for planning, designing, organizing, and presenting a unified customized curriculum (Conner 31).
4. Almost all business and industrial organizations have a centralized structure; thus industry leaders deal with a familiar organizational structure on college campuses (Conner 32).
5. Communications are handled by a generalist who has good planning, organizing, and human relations skills. This is a person who can relate to the generalists (personnel managers) from industry, eliminating some of the mistrust or skepticism that industrialists tend to have about "academicians" (Conner 36).
6. Evaluation is performed by the person or persons with authority and discretion to make program or procedural changes.

Decentralized organizations, on the other hand, have these as strengths:

1. Use of diverse "experts" who can contribute to the quicker customization of industry training
2. Broad-based participation in college/industry activities.
3. Diffusion of tasks to cover more areas.

A national survey (1985) indicated that most community colleges (73.7% of respondents) manage their college/industry training through a centralized approach. For those respondents indicating some form of decentralized organization, the responsibility is shared between those who manage credit and those who manage non-credit programs (Deegan 15).

The Survey of College/Industry Relationships in North Carolina verified the national patterns. Data indicate that most North Carolina colleges use a centralized continuing education division approach for managing most training activities including New and Expanding Industry training, Small Business Center assistance, F.I.T. Centers, and occupational extension courses. Responsibility for initiating and managing other industry related activities such as advisory committees, JTPA relationships, return-to-industry programs and foundation involvement is shared by academic deans and directors, instructional vice-presidents, and college presidents.

While the research is not overwhelming, the centralized organization appears to be favored as being most effective and will be included as the preferred approach in our framework.

Full-Time Responsibility

The centralized approach is based on the assignment of responsibility for planning, designing, organizing, delivering, and evaluating college/industry interactions to one person, preferably a full-time person who devotes 100% of his/her time to this

effort. The key competencies and knowledge needed by the college/industry dean or director include the following:

> - Knowledge of the community and the history and operation of the college, including its funding, state rules and regulations, and local policies and procedures.
> - Ability to prepare and evaluate pricing practices.
> - Ability to plan and prepare promotional materials or a set budget.
> - Ability to manage individual and group communication processes, both oral and written.
> - Knowledge and ability to apply curriculum planning and scheduling processes.
> - Ability to select, appoint, supervise and evaluate a diverse faculty.
> - Ability to manage classroom details.
> - Ability to maintain academic and non-credit records, including registration, payment of fees, certification and transcripts.
> - Ability to elicit cooperation from other college personnel (Conner 33).

In addition to these competencies, the industry services dean or director should possess the qualities of a good leader since leadership is often the catalyst for producing effective college/industry interactions.

Procedures/Protocol

A fourth essential element of successful college/industry relationships is an accepted protocol or set of procedures for handling requests for training. The components of the protocol include the following: (1) preparing for the process, (2) the initial planning meeting, (3) design of the proposal, (4) formal presentation, (5) acceptance of the job and follow-up procedures.

In anticipation of beginning an industry training program or expanding college/industry interactions the industry services person(s) should carry out some rudimentary preliminary activities. First, a list of potential companies and titles of specific contact people should be compiled. The college's program offerings (both credit and non-credit) and the flexibility of the college within its current structure should be assessed. A marketing program should be developed which emphasizes programs which have business applicability, good reputation, strong faculty, up-dated equipment, and forceful leadership. Within the community college system, certificate programs are usually closer to the configuration of credit courses in which companies will be interested. Of course, many companies will want the training programs to be customized to meet their specific needs. In this case, credit courses will seldom be available to meet those demands.

The campus assessment should draw the parameters of how flexible the college is and how quickly curriculum changes can and should be made. In addition to the curriculum assessment, the industry services dean or director should develop detailed knowledge of the college's ability to work out details of contracting, pricing, articulation with degree programs, parameters for using regular faculty, and a list of services that can be made available to off-campus students. A reasonable time-frame for responding to industry's requests should be adopted and followed.

After laying the groundwork, the industry services person is ready to tackle the first request for training from industry. Having a planned approach to follow will eliminate many pitfalls and "false starts."

Initial Meeting

In the initial planning meeting, Brown (1981) suggests that the college should be represented by a small team who have expertise in key areas of the college. The team should consist of one person who can commit the college and its resources, a person who represents the academic side of the endeavor, a technical person who is familiar with the company's products and jargon, and a person who can follow up on the conversation. The company will be represented by one or more persons with general and specific information about what is needed for their employees. The industry services person's responsibility in this meeting is to share printed promotional material describing the college and its resources and to facilitate industry's listing of what should be included in the training program. The end result of the meeting should be a consensus on which regular college courses are to be offered or a list of competencies that will comprise the training program.

Proposal Design

The design of the proposal should include the company's delineation of what is needed. College personnel may contribute suggestions on prerequisite knowledge necessary to learn certain skills, equipment needs, procedures for articulating industry

training with college courses, and availability of teaching staff. The closer the context of the program is to what the personnel from the company request, the better their chances of supporting it (Brown 11).

The proposal should be simple and concise. However, it should include these components: (1) Curriculum - detailed course descriptions, sequence of instruction, number of hours of lecture/lab instruction, total number of hours of credit, methods of reporting credit (C.E.U.'s or academic), and applicability of credits to a degree or certificate; (2) Schedule - calendar for the program, hours, days and location of each class, attendance reports and requirements, procedure for handling any needed changes in schedule; (3) Cost - equipment needs, overhead costs that must be absorbed, method and timing of payments, and a sample of the formal contract (Brown 12).

Formal Presentation

It should become accepted practice for the college/industry coordinator to prepare a rough draft of the proposal and submit it to the industry representative for suggestions and approval.

The formal presentation of the proposal is usually made to the company officials who can make a decision. The industry services coordinator should be prepared to make minor adjustments, such as additions or substitutions to the proposal. It is imperative that he/she have a full understanding of the discretionary powers of his/her position and the types of issues which will need to be referred back to the college's C.E.O. for

approval. A misstep at this point will cause a credibility problem that can be difficult to mend. An hour is sufficient time to allow for the formal presentation. If everything is in order, the company officials may wish to make a decision at this meeting. A well-prepared industry services coordinator will already have the contract drawn up in the event that the company wants to act on the proposal at the presentation. It is more likely, however, that industry representatives will ask for a day to talk over the proposal and then contact the college with their decision.

Acceptance and Follow-Up

Once the industry has accepted the proposal, the college's industry coordinator should make sure that the contract has been written and signed. A written agreement should be a part of the delivery phase of the college's training for industry. This agreement should specify the tasks to be performed, purposes, responsible person, time-lines, place that tasks or training will be performed, responsibilities of each party, management approach to be used, and the evaluation and follow-up procedures. Making the agreement a formal part of the process will avoid misunderstandings from either party. Industries are accustomed to using written contracts, and colleges can soon learn to adapt to the same protocol and procedures (Jackman and Mahoney 44).

All that remains then is taking care of all details for setting up and teaching the classes/training. A checklist of those sequential details is offered for those who may have little or no experience in setting up a class or training activity.

_____ select and employ instructor (contract)

_____ secure location for class or training activity

_____ order textbooks

_____ secure needed equipment and supplies

_____ organize paperwork requirements

_____ orient faculty

_____ complete registration procedures

_____ collect payment and issue receipts

_____ drop in to check on class's progress

_____ evaluate the class

_____ issue certificate or appropriate completion report

_____ collect necessary paperwork from instructor

_____ file appropriate reports

_____ use evaluation to plan new activities or make changes in program and/or procedures

Finally a valid evaluation plan is a critical part of an effective college/industry training plan. A good evaluation system should achieve the following: (1) pinpoint problems in the procedures or service delivery, (2) identify strong and weak instructors, (3) serve as measures of cost-effectiveness.

Evaluations can serve as justification for continuation of an industry training program, as well as for a request for expansion. The process also allows for future tracking and planning. It demonstrates to the company that the college is concerned about the quality of the program and its ability to meet the firm's objectives.

## Proposed Framework for College/Industry Interactions

### Introduction

The following proposed framework for college/industry interactions for North Carolina's Community Colleges is essentially an organized approach to managing a multi-faceted process. While most colleges in the North Carolina Community College System have several college/industry relationships, there is little similarity in how these interactions are initiated or managed. The piecemeal approaches, while comfortable to some, may lead to conflicting information being given to industry representatives. The proposed framework is not an entirely new approach: portions of it are already being used by some colleges. Therefore, while building on an already existing foundation, the proposed framework should strengthen and refine some existing procedures and offer direction for those who are initiating or expanding college/industry relationships, especially industry training programs.

### Purpose

Because of crowded agendas and multiple responsibilities for many community college administrators, the long range planning is "how to make it until the end of the week" management by crisis approach. Yet looking ahead in a time of rapid change is a vital aspect of management. Strategic planning must become an integrative part of each college's efforts to meet

the needs of an environment with shifting external conditions and opportunities.

Gollattscheck (1983) makes this statement about the community college's relationships with external groups and individuals:

> More than any other activities [these relationships] determine how the community perceives the college. This in turn determines the ways in which the community uses the services of the college and the extent to which the college is allowed to become involved in meeting the needs of the community (Gollattscheck 21-22).

Without effective external relationships, the college is likely to fail to achieve many of its missions, goals, and objectives. On the other hand, effective management of external relationships may allow the college to meet identified needs, expand its services and mission, and shape the future and direction of the school. Strategic management of relationships with industry brings them into the planning, implementing, and evaluating processes of the institution and ensures that these relationships develop in an orderly fashion, not haphazardly. The proposed framework is based on both strategic management and operational management principles. Strategic management creates a framework of relationships, assessments and strategies; and within that framework, the logical, sequential operational management functions can occur. The framework is consistent with Myran's (1983) four steps in strategic management in the community college: "building relationships,

assessing goals and trends, forming strategy and implementing decisions based on the first three steps" (Myran 12). These visions or conceptual frameworks are needed to guide our policy and decision-making processes in practical daily activities and interactions.

The proposed framework for college/industry interactions includes both strategic and operational processes. The strategic management components are planning, selection, organization and delivery of service, and evaluation processes. In addition, the framework includes suggestions for the operational management of each of these components.

Organization

The first step in the proposed framework is to establish an Industry Services Office run by a dean or director and support personnel. This dean (director) should have the full-time duties and responsibility for initiating and managing college/industry relationships. This proposal is in contrast to the traditional method of handling the responsibility in the N.C. Community College System, where responsibility may be dispersed across several departments and involve up to 15 people. Establishing an office with a full-time director or dean affirms the commitment and support of the administration and signals to the college the placement of college/industry relationships high on the college's agenda.

Planning: 1. Establish an active advisory committee to represent industry and college to offer practical advice. Make this committee as broad-based as possible. Involve

industry representatives as full partners with college personnel.

2. Minimize any potential management conflicts by learning industry's protocol and adapting industry training procedures to that protocol.
3. Use experiences of other colleges' established relationships to avoid pitfalls.

Selection:

1. Be quick, responsive and adaptable to industry's requests for training. Meet deadlines religiously.
2. Use cost effectiveness principles to select which services the college can offer.
3. Inform industry of the college's strengths and accept only those tasks the college can deliver with quality.

Organization and Delivery

1. Include both on-campus and on-site (in-plant) components in the training program.
2. Use available training materials and equipment to cut operating costs.
3. Be specific and thorough in delineating the responsibilities of each party in the agreement time lines for each task completion, payment schedules, methods of delivery of services, evaluation procedures, follow-up procedures.
4. Identify, discuss, and agree upon procedures for modifying any part of the training plan.
5. Schedule regular meetings between program liaison persons to identify, discuss and resolve any problems.

Evaluation

1. Use an evaluation plan which measures both technical competencies and application principles.
2. Ensure that off-campus program quality

remains comparable to on-campus programs.
3. Evaluate both student outcomes and quality of teaching.
4. Modify any part of the program needed to correct problems.

The Industry Services dean or director should be a person with experience in industry and industry protocol. This person should also possess an understanding of the community college system and the dynamics of the institution. Placement of the dean or director on the organizational chart may vary, but the recommended appointment would be a dean reporting directly to the president. If a director is appointed, he/she would most likely be a part of the Continuing Education department and answer to the dean or vice-president of that division. Specific competencies and knowledge needed by the Industry Services dean or director are listed in another section of this chapter.

Support staff and services for the Industry Services office need not differ substantially from other departments. One needed support service is a multi-user computer system capable of handling scheduling, budgeting, accounting, registration, word processing, data base management, Lotus 1-2-3, and mail label generation. The dean or director and the support staff should have the knowledge and abilities to run this system.

Procedures

A college wishing to expand its services to industry and requests from industry for services or training would trigger the same steps of planning, selection, organizing and delivery, and evaluation. The actions are conceptualized in Figure 3.

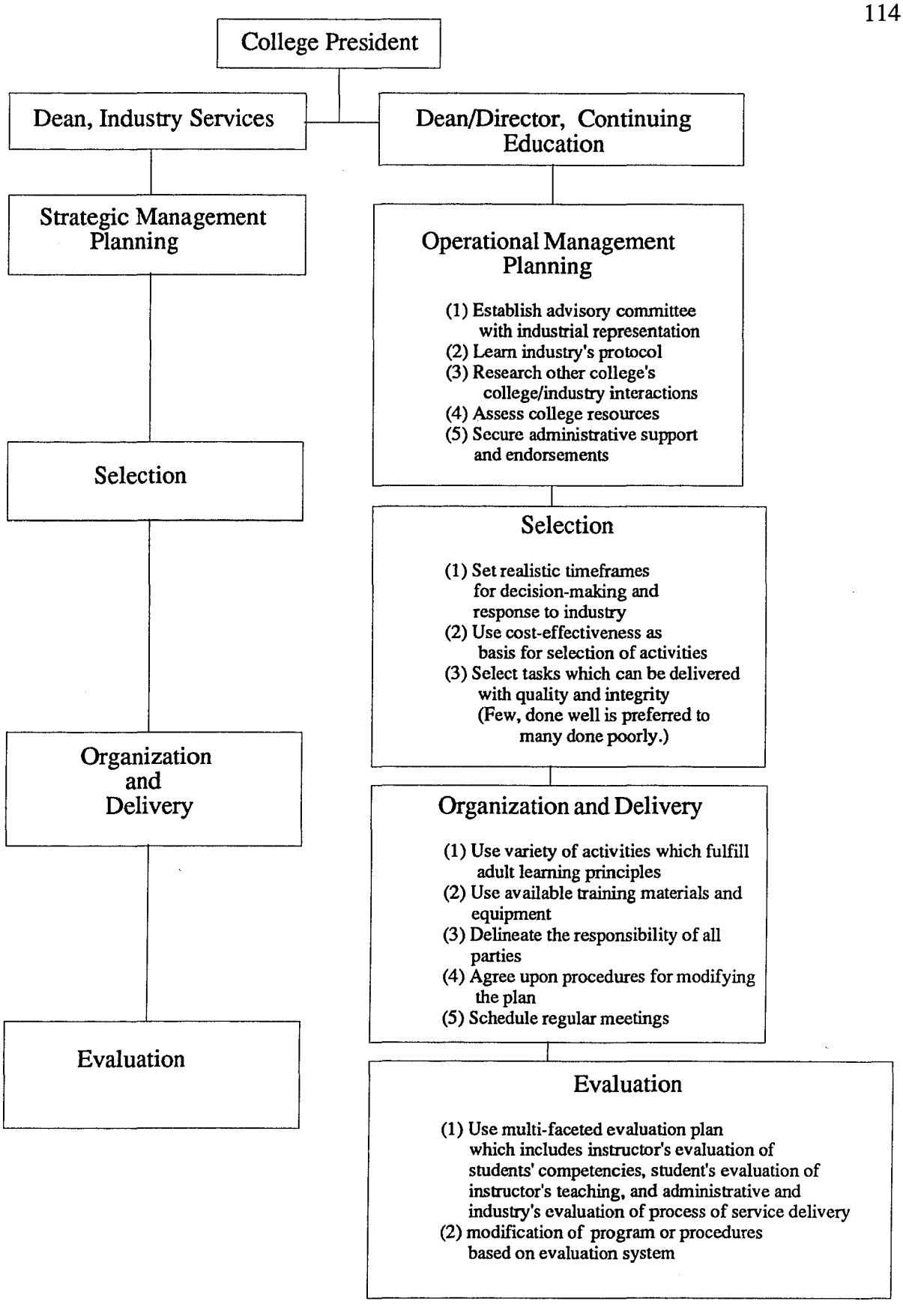



FIGURE 3: PROPOSED FRAMEWORK FOR COLLEGE/INDUSTRY INTERACTIONS

Evaluation

The evaluation process should be three-fold. Evaluation procedures for the assessment of the training and education offered to industry are included in the contract for services itself. These procedures include a list of competencies to be attained, the criteria by which these competencies will be measured, the agreed-upon level of proficiency to be attained, and the methods of testing these competencies. The person(s) delivering the instruction or training is/are responsible for conducting this evaluation and reporting it appropriately.

A second type of evaluation is the assessment of the instructor's delivery of the instruction/training. Each college should be using these evaluation tools on a regular basis. The dean or director, along with the students receiving the training, should evaluate the sufficiency of the instruction delivered. Results of these evaluations can be discussed with the instructor for purposes of the improvement of instruction. The results can be reported to senior administrators and can be useful in the selection of faculty for future contracts.

The third type of evaluation is the assessment, by college and industry representatives, of the institution's total delivery of services to industry. This component is the most difficult to measure and is usually done on an annual basis. This type of evaluation may take any of several forms: cost effectiveness, repeat business, or direct reporting. Results of these evaluations

are used to make any needed changes in procedures or organization of the Industry Services Office.

A good evaluation system uses the results of each phase as feedback to make needed changes and improvement of the procedures. The evaluations can also be used to identify new training needs. Therefore, evaluation provides the impetus for the planning cycle to recur.

Policy Needs

For colleges planning to expand their college/industry interactions, there are several policy concerns, many at the state level, which need to be addressed.

A state policy framework is composed of the state laws, administrative regulations and guidelines, financing formulas, governance structures, authorized programs and personnel practices, that affect both the community colleges and individuals within the state. It is also composed of the operating procedures of agencies and institutions, scheduling practices, eligibility guidelines, information and counseling objectives, outreach strategies, modes of teaching, and methods of evaluation (Gilder 2).

There are three critical elements of state policy framework:

1. Mission statements for the institution.
2. Finance mechanisms congruent with mission.
3. Balanced governance control between local and central authority.

To become a priority on the college's agendas, the state system must emphasize the expansion of college/industry activities. While this is a component of the system's current mission statements, these interactions need to have funding priority. This includes funding a position for an Industry Services dean or director for each college and the support staff and services necessary to sustain an Industry Services Office. To ensure that these funds are managed wisely, each college should formulate an annual plan and budget and be held accountable for meeting both the objectives and the budget.

At the local level these policy questions must be addressed: What priority will college/industry interactions have in the college's mission? What effect will the programs have on the values and reward systems of the institution? How will the offices be organized to ensure quality and integrity? Will the college provide enough support, monetary and human resources, to initiate, expand, or maintain college/industry interactions? What will be college's policy on distribution of profits? What procedures for staff and program evaluations will be required?

Summary

In this chapter a proposed framework for college/industry interactions in the North Carolina Community College System was presented. The essential elements of the framework were shown in graphic form and described as well. The framework was a result of data collected from questionnaires distributed to the fifty-eight community colleges in North Carolina, interviews

with college/industry administrators in selected institutions, and a review of the literature. The framework is appropriate for the North Carolina Community College System because of its responsiveness to perceived needs in the system and because it offers both strategic and operational approaches to manage the diverse college/industry interactions possible in North Carolina's fifty-eight community colleges.

# CHAPTER VI

# SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

## Summary

This study began with a discussion of the reasons why working with industry to upgrade the workforce is becoming a priority in the community college system. Some of the unique characteristics which make community colleges the appropriate educational institutions to handle the short-term, intensive training were presented. Within that context, a review of the various types of college/industry interactions in existence in the United States was conducted and summarized. The advantages that accrue to both the educational and industrial sectors through cooperative efforts were examined and presented. It was concluded that working closely with industry to provide needed training and education is an appropriate and desirable goal for the community college system.

To determine the current status of college/industry relationships in the North Carolina Community College System, a survey was sent to the academic deans in all fifty-eight institutions. Responses were collected from 54 of the 58 North Carolina community colleges, giving a response rate of 93%. Interviews were conducted in six community colleges with administrators who are responsible for initiating and/or managing

college/industry programs. The survey results provided information on the types of college/industry interactions presently in existence, who is responsible for managing those interactions, and the extensiveness and effectiveness of those relationships. The number of positions and the portion of administrative budget allocated to working with industry were also discussed. Information was given on planning and evaluating the college/industry programs and the preferred organizational model for delivering industrial services. The survey also provided feedback on some of the barriers to working closely with industry, and suggestions for improving college/industry interactions were offered. The in-depth interviews gathered additional information from colleges considered very successful in managing their college/industry programs.

Information from the review of literature and from the survey and interviews was compiled to form the basis of a proposed framework for college/industry interactions for the fifty-eight institutions in the North Carolina Community College System. This framework included both strategic and operational planning components, thereby integrating both theoretical and practical approaches.

Conclusions

These specific conclusions were drawn from the study:

1. There is a need for expanding college/industry programs in the North Carolina Community College System if the colleges are to remain the primary deliverers of training to upgrade the

current workforce. The State's community colleges have the capability of accomplishing this appropriate and desirable goal, but college administrators reported a lack of interest or commitment to making changes in their procedures for working with industry.

2. If college/industry interactions are to become a more important priority in the North Carolina Community College System, six factors must be present. These include administrative support, an organized approach to managing the process, the assignment of responsibility to a full-time person, a set of procedures for arranging training activities, formal agreements, and evaluating.

3. Specific procedures for managing college/industry programs at the local institutions in the North Carolina Community College System should be developed. While most colleges are currently offering programs and services, a disorganized approach prevails in the system. College/industry programs have not, as yet, been given a high priority system-wide.

4. Strategic and operational management approaches are appropriate ways to manage the diverse college/industry programs each community college may wish to offer.

5. The selection and delivery of college/industry programs must address industry needs, as well as college resources, and be based on cost-effectiveness or other agreed-upon criteria.

6. Curriculum standards for all training programs should be set and ensured through an evaluation plan. Evaluation should then be used as a basis for a new planning cycle.

Recommendations

The following areas are recommended for further study and possible action by the North Carolina Department of Community Colleges:

1. The role of college/industry programs in state economic development needs to be examined and defined. This study revealed that the North Carolina Community College System has a mission statement which includes a commitment to occupational training and upgrading programs for businesses and industries and specific goals to stimulate state and regional economic development. There are, however, currently no direct measures or indices of the impact of the community college services on local, regional, or state economic development. A method of measuring and reporting the effect of college/industry programs on economic development could be instrumental in justifying current expenditures or for requesting additional allocations for expanding services to industry.
2. Many administrators in the North Carolina Community College System have had no direct industry experience. If a commitment is made to put a full-

time person in charge of college/industry services, this person must have knowledge in industry protocol and expectations. Opportunities for obtaining that knowledge must be provided, through coursework or industrial apprenticeships, to community college personnel who may be promoted to the position of full-time industry services deans or directors. Staff development services should be expanded to include administrative staff development activities. A significant component of this professional development should be an emphasis on the qualities and practices of good leadership.

3. As proof of the state's commitment to the college/industry interactions, state policies should provide tax breaks or economic incentives to new industries locating near and working with community colleges to provide start-up training for their employees.

4. All instructors involved in teaching in industry training programs should demonstrate a working knowledge of adult learning theories and strategies to accommodate various learning styles. One method of ensuring this is to require all instructors to take a "Train the Trainer" course as part of their orientation unless they have had specific education courses which address these issues.

5. The state legislature should recommend funding a F.I.T. Center or Business/Industry Coalition for each of the fifty-eight institutions in the North Carolina Community College System. The principal purpose of these centers should be the advancement of college/industry programs.
6. The funding formulas for financing industry programs should be changed to encourage community colleges to offer more industry programs. Differential funding formulas or a funding system based on total enrollment and services should be examined as alternates to the current F.T.E. funding method.
7. More flexibility should be allowed for local institutions to determine which programs should be offered. Curriculum approval processes should be streamlined to allow more responsiveness to critical, short-term training needs. Individual institutions should be encouraged to formulate some proactive (as opposed to reactive) training programs for local industrial development.
8. Sound marketing strategies for college/industry programs should be developed and shared through a state marketing task force.
9. Program evaluations for assessing the responsiveness of institutions to local needs and the adequacy of the training provided should be required of each college.

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APPENDIX A

SURVEY OF COLLEGE AND INDUSTRY RELATIONSHIPS

I. 1. What types of formal relationships does your school have with local industry? (Check all that apply)

_____ Advisory committees
_____ JTPA agreements
_____ Return-to-industry
_____ Foundation involvement (support)
_____ New and expanding industry training
_____ Occupational extension classes
_____ Small business center assistance
_____ F.I.T. Center
_____ Industrial Representation on Board of Trustees
_____ Other (please specify)_____

2. How extensive, in your opinion, are these relationships?

| | strong +2 | +1 | 0 | - 1 | weak - 2 |
|---|---|---|---|---|---|
| Advisory | __ | __ | __ | __ | __ |
| JTPA | __ | __ | __ | __ | __ |
| Return to ind. | __ | __ | __ | __ | __ |
| Foundation Inv. | __ | __ | __ | __ | __ |
| New and expanding Industries | __ | __ | __ | __ | __ |
| Small business center assistance | __ | __ | __ | __ | __ |
| F.I.T. Center | __ | __ | __ | __ | __ |
| Industrial Rep. on Board of Trustees | __ | __ | __ | __ | __ |

3. How effective, in your opinion, are these relationships?

| | effective | | | | ineffective |
|---|---|---|---|---|---|
| | +2 | +1 | 0 | -1 | -2 |
| Advisory committees | __ | __ | __ | __ | __ |
| JTPA agreements | __ | __ | __ | __ | __ |
| Return-to-industry | __ | __ | __ | __ | __ |
| Foundation Inv. | __ | __ | __ | __ | __ |
| New and expanding Industries | __ | __ | __ | __ | __ |
| Small business center assistance | __ | __ | __ | __ | __ |
| F.I.T. Center | __ | __ | __ | __ | __ |
| Industrial Rep. on Board of Trustees | __ | __ | __ | __ | __ |

4. What persons from the college has responsibility for initiating and maintaining these college/industry relationships?

Advisory Committees

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

JTPA Agreements

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

Return to Industry

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

Foundation Involvement

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

New and Expanding Industry Training

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

Occupational Extension Courses

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

Small Business Center Assistance

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

F.I.T. Center

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

5. When an industry requests that the college provide training for industrial employees, what person(s) in the college is/are most likely to follow up on the request?

_____ President or Vice President _____ Dean of Academics
_____ Dean of Continuing Education _____ Directors
_____ Faculty _____ Other (specify) _____

6. How many (_____) persons are involved on a full-time basis in administering buisness/college linkages?

How many (_____) persons are involved on a part-time basis inadministering business/college linkages?

7. What part of the administrative budget is used to initate and maintain industry/college relationships?

_____ 0% _____ 11 - 15%
_____ 1 - 5% _____ 16 - 20%
_____ 6 - 10% _____ Unsure

8. Does the mission statement of your college contain statements directed at fulfilling local industry's needs?

_____ Yes _____ No _____ Unsure

9. Do administrators at your college meet on a regular basis to plan discuss, and/or evaluate college/industry programs?

_____ Yes (If yes, how often? _____)

_____ No (If no, how are planning and evaluation carried out_____

10. What types of problems does your college face in its attempts to work with industry?

_____ budgeting constraints _____ personnel shortages
_____ lack of industrial knowledge _____ differences in protocol_____ differences in management style
_____ political differences
_____ other (please specify)_____

11. In your opinion, could your college's relationships with local industry be improved through (1) a change in procedures for working with industry?

_____ Yes _____ No; (2) through reassigning responsibility for working with industry to a centralized department or person?

_____ Yes _____ No; (3) through reassigning responsibility for working with industry to various departments? _____ Yes _____ No

II. 12. What suggestions can you offer for improving the college/industry relationships in the North Carolina Community College System?

13. How many (estimate) formal relationships does your school have with local business/industry?_____

Please list the major companies/industries with which your college has industry/college relationships:

III. 14. Name of person completing the survey, title, and college

Name_____
Title_____
College_____
_____

IV. Would you like to have a copy of the survey results?

Yes_____ No_____

APPENDIX B

QUESTIONS TO BE ANSWERED ABOUT THE SURVEY INSTRUMENT:

1. Were the directions and questions clear and readable?

2. Did you have access to the information necessary to answer each question?

3. What problems did you encounter in answering the survey?

4. What suggestions can you offer for improving the survey?

APPENDIX C

(SURVEY LETTER)

February 3, 1989

As you know, there is a growing demand in our state for community colleges and industry to work cooperatively in offering training and education to employees. The existing cooperative relationships take many forms and yield a variety of benefits.

Because there are common missions which bind the North Carolina Community College System, share information about the types and number of college/industry relationships could be helpful to each institution in the system. Such information has been, to this point, scarce and largely anecdotal. Specific information about the college/industry linkages is needed if we are to expand the community colleges' role in industrial education.

As a doctoral student in Educational Administration at UNC-Greensboro, I am seeking to develop information about the types and perceived effectiveness of existing college/industry relationships. Each college in the N.C. Community College System is being asked to participate in this study.

Please complete the enclosed survey and return it to me by February 16, 1989. I have enclosed a stamped, self-addressed envelope for this purpose.

Your assistance with this project will be greatly appreciated.

Sincerely,

Marty S. Ellis
Director, Curriculum & Instruction
MTCC, Marion, NC 28752

APPENDIX D

(FOLLOW-UP LETTER)

The initial response to the Survey of College and Industry Relationships sent out on February 1, 1989, has been surprisingly good. However, to make the data as current and valid as possible, I would like a 100% return rate.

If you have already returned your survey to me, please accept my thanks and disregard this letter.

If you have not sent your survey back to me, please take a few minutes to complete the enclosed survey and return it to me by February 25, 1989.

I would really appreciate your help in letting me know what your college is doing in its college/industry linkages. The sharing of this information about the successes at your school can only make us that much stronger as a system.

Enclosed is a stamped, self-addressed envelope for your reply. I look forward to receiving the completed survey.

Sincerely,

Marty S. Ellis
Director, Curriculum & Instruction
MTCC, Marion, NC 28752

APPENDIX E

INTERVIEW QUESTIONS

1. DESCRIBE, IN YOUR OWN WORDS, THE STYLE OF LEADERSHIP YOUR PRESIDENT EXHIBITS.

2. HOW WOULD YOU CHARACTERIZE YOUR OWN LEADERSHIP STYLE?

3. HOW IS PROBLEM-SOLVING APPROACHED BY TOP ADMINISTRATORS AT YOUR INSTITUTION?

4. IS THERE ONE RESIDENT "EXPERT" WHO HANDLES MOST INDUSTRIAL CONTACTS AND CONTRACTS? IS IT SOMEONE OTHER THAN YOURSELF? IF YES, WHO IS THAT PERSON AND WHAT POSITION DOES THAT PERSON HOLD?

5. WHAT PROTOCOL OR PROCESS IS FOLLOWED WHEN AN INDUSTRY REQUESTS TRAINING OR ASSISTANCE?

6. WHAT ARE THE GUIDELINES USED TO DETERMINE WHETHER OR NOT THE COLLEGE CAN MEET A PARTICULAR INDUSTRY'S REQUEST? LIST THOSE, THEN ASK FOR PERSON TO PUT THEM IN PRIORITY ORDER.